FACULTY OF COMPUTER SCIENCE
&
INFORMATION TECHNOLOGY

A WEB-BASED APPLICATION FOR LADIES SHOPPING STORE

By

ALICE AEGIDIUS SITIOL
WET 97093

Supervisor

PROF. MADYA DR. DILJIT SINGH

Final Year Project, submitted as a partial requirement for the degree of Information Technology, Faculty of Computer Science and Information Technology, University of Malaya, Kuala Lumpur. 2000/2001

ACKNOWLEDGEMENT

I would like to express my warmest gratitude to Dr. Diljit Singh, my supervisor, for giving guidance, support and freedom to choose any method throughout this project.

Thanks to Mr. Woo Chaw Seng for being my moderator.

And to my beloved family, thank you for the love, motivation and support. Also thanks to my friends for helping me through by sharing knowledge and resources with me in completing this project.

ABSTRACT

Within a few short years, electronic commerce has revolutionized global industries as companies all around the world are joining this Internet economy bandwagon. Conducting commercial activities via the Internet is no doubt one of the best ways to expand a business. This enables buyers and sellers of any size or industry to come together for trading purposes in a convenient, cost efficient and secure online environment.

Electronic Ladies Shopping Store (e-LSS) is an e-commerce site that sells and promotes ladies products such as clothes, fragrances, accessories and many more. The main objective of this project is to develop an interactive and user friendly online selling site using FrontPage 2000.

The development of e-LSS emphasized to be a browser and platform independent. This was accomplished by using VBScript to code the client side processing while Active Server Pages (ASP) to code the server side processing respectively. Internet Information Server (IIS) 4.0 that runs on Windows NT server platform was chosen this project web server. It is also aimed to have a back-end database that is Microsoft Access 2000 for providing updated product information, user information and product database.

It is vital to develop e-LSS as it will be one of the first sites in Malaysia that will be selling ladies products online.

TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

CHAPTER ONE

INTRODUCTION

CHAPTER ONE
INTRODUCTION

1.1 Introduction

Electronic commerce (e-commerce) pertains to a wide variety of business activities, which are conducted electronically. Many technologies can be used in support of electronic commerce. As described by the Electronic Commerce Association, it may involve streamlining processes, interconnectivity, Internet, electronic data interchange (EDI), electronic funds transfer, e-mail, security, electronic document management, workflow processing, middleware, barcoding, imaging processing, smart cards, voice responses, and networking.

Among those technologies, the one which has recently become the focus of attention from all business management is the Internet. The potential of the Internet and in particular, the World Wide Web (WWW), has gained incredible notoriety as commercial mediums and markets. The tremendous growth of the Internet and the WWW has led to an enormous amount of consumers and firms participating in a global online marketplace. The main technologies underpinning electronic commerce are the major computing and communications technologies, as well as database management systems.

E-commerce means sharing of business information, maintaining business relationships, and conducting business transactions by means of telecommunications network. Since exchange transactions will increasingly be carried out electronically and online, the network in many instances serves as the market.

With explosive growth in Internet connections worldwide, networked communication has the potential to shrink geographic distance and facilitate information exchange among people of various backgrounds. The Internet creates a global marketspace which breaks the barrier of time, distance and place, within which to conduct e-commerce. Many work opportunities were created via the Internet so that workers could overcome obstacles of time.

The growth of e-commerce is closely linked to the growth of online communities, communities that are not conterminous with traditional market geographies. As e-commerce increases the extent of

national economic activity that is trade exposed, conventional distinctions between domestic and export demand break down quickly.

E-commerce is still in the early market stage, although it is going to become a powerful tornado since its leverage is so huge. New methods for introducing product/service concepts, transacting, and paying over the Internet are constantly appearing. More important, one implications of e-commerce is unbrokered transactions – those in which consumers are willing to put credit card numbers onto the Internet without having a broker.

The advantages of e-commerce are:

- Easier for customer to access more information, market research and comparison
- Freedom to expand product portfolio
- Huge reduction in marketing cost
- Increased sales turnaround
- Accurate, timely management data
- Improved customer services
- Better communication

1.2 Objectives

The objectives of developing electronic ladies shopping store (e-LSS) are as follows:

- To design and develop interactive and easy-to-use graphical user interface to make this electronic ladies shopping store a user-friendly, which allowing every process to be accomplished on a computer-based environment
- To be reliable. e-LSS ensures the reliability of service and information with fewer mistakes as the transactions are carried out electronically
- Time conscious. Customer can manage their time in a very efficient way
- An interactive site which allows customers to browse and purchase products from a web-based shopping store

1.3 Scope

This project will consist of two main modules that are the Customer Module and Administrator Module as described below:

1.3.1 Customer Module

The customer module will consist of a series of web pages that can be accessed by customers on the Internet to view and making orders on the available products. Customer home page provide the following facilities:

- Allow the customer browse the products according to categories
- Allow the customers to add all the ordered products to their shopping cart and submit the order form together
- The search page that will allow the customer to search for the products that they want to buy by the brand's product
- Include the security feature for the home page, which is needed for security and the transaction of sensitivity data

1.3.2 Administrator Module

This part of the project will concentrate on the management of the database that has information on all products to be integrated with the search page in the customer module. It will also have a function where the administrator can:

- Manage maintaining and updating all items in database
- Maintaining the purchase records
- Maintaining the member's records

1.4 Significance

e-LSS is one example of a new way of presenting information on products to be purchased by customers more effectively. There are many factors that explain the significance of this project.

The first factor will be the wide usage of electronic shopping store for buying and selling products through Internet among customers. This is because electronic malls can provide up-to-date products and an attractive opportunity where it can expand the customer needs. Through the Internet, customers can access wider and faster for all the products rather than for them to go out to shopping malls to look for the products which might take quite some time to choose.

The second factor to be considered in showing the significance of this project will be the relevance of it to the information technology age currently in Malaysia. The government has launched many programmes under its Multimedia Super Corridor project to enhance the usage of technology in all areas possible starting with its seven flagship applications. But from the survey, there are very few electronic ladies shopping stores on the Internet. The e-LSS can be a pioneer for Malaysians to put up an electronic shopping store alongside with the few other e-shopping stores by foreign market that are currently available.

The third factor to realizing this project is the benefits of putting information of products on the Internet. First of all, by putting the products on the net, it will allow customers to access information in a cheaper way and convenience of selecting and purchasing products rather than going to shopping malls. Secondly, customers will be able to access this information of the products at any time of the day by just logging on to the site. Thirdly, the information can be shared among customers around the world as they log on from various parts of the world. Moreover, with the current IT awareness among people it will not be difficult to reach them as many nowadays have computers and Internet connection at home.

The fourth factor is that, handicapped and elderly mother can manage their time efficiently to purchase products that they wanted through the Internet. They do not have to go out and waste their time just because of going to buy certain products. This will take a while for them to reach their destination, and would be inconvenience for handicapped customers.

Another reason for this project is to eliminate the cashiers and sales assistant for security purposes. The cashiers and sales assistance are prone to manipulate their job, such as not being loyal to their manager by stealing money. Grouping of items from different stores (larger coverage) would be a great opportunity.

1.5 Limitations

There are some limitations, which are not going to be developed in this project. This include:

- There will be no transaction of payment
- Not providing a secure electronic commerce solution to sell product
- Confirming delivery of products will not be covered in this project
- Not all the ladies products that exist in the market will be included. Therefore, only certain products will be incorporated in this project.

CHAPTER TWO

REVIEW OF LITERATURE

CHAPTER TWO
REVIEW OF LITERATURE

2.1 Purpose

The purpose of this review of literature is to gain better understanding of the concept involved in the project that needs to be developed and outlining the expected outcome of the project.

2.2 Approach

Before developing a system, a lot of information is needed. This information can be obtained from a variety of sources. Each source has different kind of information and requires a different search method in order to get that information. Some of the common sources of information are forms and documents, computer programs, procedure manuals and reports.

A number of ways can be used to gather information from system users namely through interviews, using questionnaires and through observation of user activities and behaviour. Forms and documents are useful sources of information about system data flows and transactions provided that only the latest documents are examined. Computer programs can be used to determine the details of data structures or processes. Procedure manuals specify user activities in a business process. Reports indicate the kinds of outputs needed or expected by users. [10]

It is very unlikely that one of these sources on its own will provide all the information needed for the development of a system. Usually more than one of these fact-finding techniques is employed to help ensure an accurate and comprehensive investigation. [11]

In this project, many books have been used, journals and previously done related project reports to gain information. Surfing on the net which helped to get information on things like software to be used, and existing electronic malls. IEEE software also gives the relevant information. Besides that, newspapers that contain business-computing section also provide more information. In the next section, the findings from all these resources will be described in detail. Most of the sources came from the library and sites on the WWW. The journals from the library helped to provide relevant information and also using the keywords in the search engines like the AltaVista Search Engine.

The system analysis and design books were found at the library of University of Malaya by using the keyword *system analysis and design* on the Online Public Access Catalogue (OPAC). A few journals found at the journal section.

The Internet search engine that commonly used such as

- http://www.yahoo.com
- http://www.altavista.com
- http://www.infoseek.com

Keyword that were used to search in the Internet such as

- E-commerce application
- Sample e-commerce sites
- ASP
- ASP code sample
- JavaScript
- VBScript

2.3 Findings

All the information gathered can be divided into two categories which are, the first one that is the printed resources category consists of two types that are books and journals and the second category that is the electronic resources come from informative websites on the Internet. Below are all the findings in detail.

All this information covers aspects like the definition of e-commerce, the different development software that can be used to develop e-LSS, the different relational database tools that can be used to work with e-LSS, and the development strategy that can be used in the development of e-LSS. Below are all the findings in detail.

2.3.1 Printed Resources

Printed resources can be divided into two as described below.

2.3.1.1 Books

This book gave information on different types of models of the software development process. Two approaches were studied:

(a) Prototyping Model

A prototype is a partially developed product that enable customers and developers to examine some aspect of the proposed system and decide if its suitable or appropriate for the finished product. The prototyping model allows all or part of the system to be constructed quickly to understand or clarify issues. It has the same objective as an engineering prototype, where requirements and design require repeated investigation to ensure that the developer, user and customer have a common understanding both of what is needed and what is proposed. One or more of the loops for prototyping requirements, design, or the system may be eliminated depending on the goals of prototyping. However, the overall goal remains the same: reducing risk and uncertainty in development.

The initial design is revised until the developers, users are happy with the result. Indeed, sometimes considering design alternatives reveals a problem with the requirements and the developers drop back to the requirements activities to reconsider and change the requirements specification. Eventually, the system is coded and alternatives are discussed with possible iteration through requirements and design. [17]

The term prototype refers to a working model of an information system application. The prototype does not contain all the features or perform all the necessary functions on the final system. Rather, it includes sufficient elements to enable individuals to use the proposed system to determine what they like and don't like and to identify features to be added or changed. Application prototyping, the process of developing and using the prototype, has these five characteristics:

(a) The prototype is a live working application

(b) The purpose of prototyping is to test out assumptions made by analysts and users about required system features

(c) Prototypes are created quickly

(d) Prototypes evolve through an iterative process

(e) Prototypes are relatively inexpensive to build

Application prototyping has two primary uses. On the one hand, it is an effective device for clarifying user requirements. Written specifications are typically created as vehicle for describing application features and the requirements that must be met.

A second use of application prototyping is to verify the feasibility of a system design. Analysts can experiment with different application characteristics, evaluating user reaction and response. [11]

(b) Waterfall Model

One of the first models to be proposed is the waterfall model illustrated in Appendix 1 where the stages are depicted as cascading from one to another. As the figure implies, one development stage should be completed before the next begins. Thus, when all the requirements are elicited from the customer, analyzed for completeness and consistency and documented in a requirements document, then the development team can go on to system design activities. The waterfall model presents a very high level of what goes on during development and it suggests to developers the sequence of events they should expect to encounter.

The waterfall model can be very useful in helping developers lay out what they need to do. Its simplicity makes it easy to explain to customers who are not familiar with software development; it makes implicit which intermediate products are necessary in order to begin the next stage of development. [17]

The linear or waterfall cycle is a development process that centers around planned work and is best suited for projects where the requirements can be clearly defined. It involves activities such as concept formation, system requirement definition, system design and development. It also includes installation and post-installation activities that usually follow the completion of development. Each phase itself is made up of more detailed activities. Testing proceeds in parallel with the major phases. A broad test strategy is defined at the time the system requirements are identified. Detailed design takes place during system design and testing is part of the development phase. Each phase in the sequence can only commence after the previous phase has been completed. Each phase usually produces one or more models or products in later phases.

Linear cycle phases are chosen to encourage top-down problem solving. It gives the project direction and provides guidance on what should be done as the project proceeds. It is integrated with the management process through reports on project status and keeping track of resource needs. [10]

2.3.1.2 Journals, IEEE, Newspapers

Some articles from journals were also useful in providing information that is vital for e-LSS. This article gave a global perspective for electronic commerce, the growth of it and the complexities faced by them. It proved to be the one of the best source for understanding the pros and cons of electronic commerce.

There are some risks of e-commerce such as changing of business environment and technology, which means more extensive involvement business in e-commerce will be able to incorporate e-commerce in purchasing, financial, and accounting system. Privacy and security problems are also very important for e-commerce. Many customers don't trust the web as a payment channel. There are three major factors affecting online shopping : familiarity, the tactile factor, and trust.

From newspapers, few useful information gained such as key security protocols for electronic commerce : Secure Electronic Transaction (SET) and Secure Sockets Layer (SSL). SET addresses the security concern of both cardholders and merchants by ensuring confidentiality, data integrity, and authenticity of the parties involved in e-commerce transactions. Although SSL reduces the risk of credit card information being intercepted, it does not authenticate the cardholder and merchant or the bank involved. All it does is keep any third party from viewing information shared between a browser and a server. As e-commerce expands, authentication and sharing encryption are necessary to make people feel comfortable with online shopping.

2.3.2 Electronic Resources

Many useful resources were obtained also from the electronic medium. They comprise websites on the WWW on aspects such as web development software, electronic commerce and relational databases. Below is a list of all the sites according to the categories.

2.3.2.1 Site on electronic shopping stores

Many high technology companies such as Dell Computer, Canon and others are providing online technical support. These allow their customers to find solutions for the problems they faced and to download needed files 24 hours a day, 7 days a week, saving the companies money on support personnel and mailing costs. The working behind these online store are simple, customers just add the products they want into a temporary cart, after finish shopping, they have to complete the order form and then submit the order.

The sites below are the few good examples of e-shopping store or simply online shopping store on the Internet.

1. Amazon.com (http://www.amazon.com)

From this site, we should familiarise ourselves with online shopping and prove how important it's to be in the millennium. Amazon.com started out by selling only books, since then, it has grown into the world's largest online store. Basically, Amazon.com carries almost any product that can be sold online. It has an auctions page where registered users can bid for items put on sale by other registered users and accepts most major credit cards. It has a very well-designed site, with a useful search engine. Its combination of reliability, security, vast range of products for sale and good design makes Amazon.com one of the best online stores.

2. CDNow (http://www.cdnow.com)

It offers almost every CD and cassette in existence, as well as other music-related products. It also offers search engine and reviews of most albums. CDNow offers streaming RealMedia and MPEG samples of certain tracks on every album. It also provides newsletter, which will tell the customer of sales and new releases, based on the taste in music. The transaction of payment by using most credit cards.

3. CDSquare (http://www.cdsquare.com)

This website offers mainly T-shirts from musicians, mostly from rock bands. They provide a good customer service. The staff deals with any complaints and questions very quickly.

4. CNET Shopper (http://shopper.cnet.com)

This site carries almost every piece of computer equipment. It acts as a converging point of a multitude of online computer equipment retailers. CNET allows user to search its archive, and also providing reviews, which allows users to post reviews, and validates the web sites listed in its "where to buy" section.

5. Mall of Malaysia (http://www.mom.com.my)

Jaring introduced the Mall of Malaysia in mid 1997, as a value added service, offering interactive transactional capabilities to leverage on the power of the global village. It has achieved tremendous growth in sales, awareness and hit rate. Jaring's Mall of Malaysia showcases thousands of products ranging from apparel and pharmaceutical goods to comics, novelties and car audio accessories. It has created satisfied customers around the world, both by its convenience and quality of service.

6. iMall.com (http://www.imall.com)

imall.com, is one of the world's first and largest online shopping sites and commerce destinations. This site use store building tools to add credit card processing and begin accepting orders online today. Use their payment gateway service, the personal interface to the world's online banking network. It's automatically integrated with merchant account.

2.3.2.2 Sites on web development software

e-LSS will be a project that uses the web-based architecture. Thus, the software or tools that will be used in its development will be some web development tool. Currently there are many such tools available in the market. Below are the sites that gave information on this aspect.

1. Microsoft FrontPage 2000

URL : http://www.microsoft.com/catalog/display.asp?site=768&subid=7&pg1

FrontPage 2000 has over than 50 professionally designed FrontPage Themes (or graphical designs) provide with consistent backgrounds, bullets, banners, hyperlinks and navigation bars across the entire web site.

There is also The Navigational View lets you create and manage the navigational structure of the web site within seconds. The shared borders allow specifying shared headers and footers, or right

and left margins across the pages in the site. FrontPage 2000 will update the Navigation Bars automatically, saving time and keeping links current.

2. Sams Teach Yourself visual InterDev 6.0 in 21 days

URL : http://www.itknowledge.com/reference/library/0672312514/ch01

This is actually an electronic book. It tells about the features of this software and also how to use it. It also stresses on the advantages of this software. Microsoft Visual InterDev provides all the necessary tools to build these vital applications for the web. It is a comprehensive, web-based application development tool. It provides an integrated environment that brings together various technologies to work toward a common goal of building robust and dynamic applications for the web.

Managing web site once it has been developed is a very crucial function. Visual InterDev provides a set of tools to view and maintain the site. These tools are similar and compatible with the site management tools found in Microsoft FrontPage.

2.3.2.3 Site on Relational Database Tool

e-LSS will be working with a back-end relational database. Microsoft Access 2000 was chosen because of it very user-friendly features. Below is a site that describes the features of it:

Access 2000

URL : http://www.microsoft.com/catalog/display.asp?site=769&subid=22&pg=1

The standard database wizard automatically builds tables, queries, forms, and reports from more than 20 types of full-featured templates, giving the option to further customize them to suit the needs. Access 2000 offers an improved hyperlink interface to make it easier to create, edit, follow and remove hyperlinks in databases.

2.3.2.4 Site on web designing

Design strategies

URL : http:// info.med.yale.edu/caim/manual/intro/introduction.html

All presentations of information are governed by a few parameters determined by objectives, the practical logistics of the medium that have been chosen, and by the nature of the audience.

The following categories of Web use are more typical of corporate and educational "intranet" sites where the users arrive with a more defined purpose:

(i) Training

Web-based training applications tend to be very linear in design, and present few opportunities to digress from the central flow of the presentation. Restricting the links to "Next" and "Previous" paging functions guarantees that everyone sees the same presentation, and allows making more accurate predictions of user contact time. Most training presentations assume a contact time of less than one hour. User log information and scores are typically stored in a database linked to the Web site.

(ii) Education

Often the typical user is already highly educated. Flexible, interactive, non-linear design structures are ideal for these users, because it is so difficult to predict exactly what topics will most interest an experienced professional or graduate student. The design must allow fast access to a wide range of topics, and is typically very dense with links to related material within the local Web site and beyond on the World Wide Web. Text-based lists of links work well here for tables of contents and indexes because they load fast and are dense with information, but this audience is also easily bored and needs the frequent stimulation of well-designed graphics and illustrations to stay involved with the material. Contact times are unpredictable, but will often be shorter than for training or education sites because the users are usually under time pressure. Easy printing options are also a must for this audience.

(iii) Reference

The best-designed reference Web sites allow users to quickly pop into the site, find what they want, and then easily print or download what they find. Content and menu structure must be carefully organized to support fast search and retrieval, easy downloading of files, and convenient printing options. Keep the graphics minimal to speed download times, and may want to investigate search

software instead of relying exclusively on index-like lists of links. Contact time is typically brief, the shorter the better.

2.4 Analysis

The review of literature revolves around getting information on few aspects that are journals, electronic shopping store, development strategies, web development software and relational database tools. These aspects are very important to be understood before the development of e-LSS.

Examples of e-shopping stores that exist currently on the Internet were studied. The common features of all these online shopping stores such as search page, customer service, and also authorized user. These features can be incorporated into e-LSS too.

This literature review focused on two main options for development strategies that are prototyping, and waterfall model. The most suitable one will be determined in the next chapter according to the requirements of e-LSS. The web development tools and relational database to be integrated into e-LSS were also chosen carefully. Microsoft Access 2000 was chosen because of its user-friendliness and ability to be integrated with Microsoft FrontPage 2000. All information gathered will be used to development of e-LSS effectively.

The following are practical guide of setting up an e-commerce site. Some of the common characteristics of the e-commerce sites mentioned above:

- Request user to register

  Every user assigned a specific login ID and a password before ordering an item. This is because, in order to store customer information for recurring purchases, information recall and administrative bookkeeping.

- One-shot Shopping

  The simplest way to deal with maintaining state is to work on it, send everything related to the order in one message. This approach has the advantage of simplicity. The script takes the fields, checks for needed data, send an e-mail message to the site owner, and send a thank you page to the user.

- The Shopping Cart

  The shopping cart is an interface with its deeper infrastructure, allowing user to select merchandise, review what they have selected, make necessary modifications or additions and buy merchandise.

- Browsing capabilities

  By browsing through the site, user can see all products according to its category. All the products have been classified for convenience.

- Capturing Order Information

  The information associated with each ordered item should be collected when users put the item into their shopping cart. In the simplest case, the information to be collected is only what the user wants.

- Allowing to Review and Modify the Order

  Users may want to review at the contents of the shopping cart from time to time. They may also want to see the total cost of the order, including any additional charges such as shipping and handling or insurance that can be displayed at this point. Users may also want to change the quantity of an ordered item.

- Search Engine

  User can use computer-based searching techniques to quickly locate products by entering keywords without browsing through the whole website.

- Customer service or FAQ section

  Having this section is to help user or guide them how to order a product or browse/search a product. It also provide customer to change their profile.

- Contact

  It provides a section for customer service for those who want to contact the store or having difficulty in placing an order for a product via e-mail.

- Deal, bargain, and promotion

  This link will show the user the current deal or bargain for selected items or promotion items.

- Multiple payment method

  User has given a choice of payment whether to pay through credit card on manually (such as money order, check, and post)

Some technical aspects that a an e-commerce would need to consider are:

- Secure Server

  A secure server is a running software capable of establishing a "secure" connection with the customer's Internet browser using SSL (secure socket layers) technology, which encrypts all transmitted information. Most net buyers insist on this connection before entering credit card information. Usually there are secure server services to host an e-commerce site. This comes with a minimal sum that must be paid to obtain secure server.

- Stable Web Server

  A stable web server is needed to host an e-commerce site. The purpose of a Web server is to respond to HTTP requests from the browser by delivering a requested file, or executing a requested script. Two main web servers in the market are:

  - Apache for Linux and Unix
  - IIS (Internet Information Server) 4.0 for Window NT

  The Internet Service Provider (ISP) will also make a significant charge to support a permanent high-speed connection.

- Merchant Account

  Merchant Account is an industry term meaning a banking relationship, which allows a business to accept credit cards. Most existing businesses will already have established such a relationship and an e-commerce site needs this capability to accept credit card orders on the net.

CHAPTER THREE

METHODOLOGY

CHAPTER THREE
METHODOLOGY

3.1 Project Description

e-LSS is going to be a web-based electronic ladies shopping store. It will have all the features of an e-commerce site.

3.1.1 Modules in e-LSS

e-LSS is planned to have the following modules.

3.1.1.1 Customer Module

Has the following section:

(i) Main

Links to main menu and display as the customer enters the site

(ii) Login

User login to purchase a product

(iii) Register

New user who wants to register to obtain a login name and password

(iv) Browsing Product

Browsing products according to category

(v) Shopping Cart

Retain the contents of a cart, compute total price, and add sales tax, shipping and handling of the order process

(vi) Member Service

Member service provides guidance for customer who has difficulties in placing an order for a product and guidelines of ordering a product.

(vii) Contact

Allowing customer to contact the store for assistance or any problem that arises

(viii) Search

Allowing customer to search for particular products

(ix) Order Lookup

Ability to trace the status of the order purchased by a customer

(x) Database Administration

Administrate the database directly in the database instead on the web

3.1.1.2 Administrator Module

Consists of three sections:

(i) Authentication

Will allow only authorized users into this module.

(ii) Information Maintenance

Will handle the maintenance of information in the database.

(iii) User Module Updating

Will allow updating of certain pages in the user module.

3.1.2 Characteristics

- Simple and user-friendly
- Informative
- Well managed and organized

3.2 System Requirements

There are divided into functional and non-functional requirements.

3.2.1 Functional Requirement

Functional requirements describe an interaction between the system and its environment. They also describe how the system should behave given certain stimuli. [17]

Customer Module

- Allows customer to browse all the information of the product sold by e-LSS
- Non-registered customers must register as a member of e-LSS before they can purchase any products from e-LSS

- This include the functions:
  - Customers can register as a member before they can make order from e-LSS, a member can also update their information such as changing personal information and changing password.
  - Searching product by category or keyword. They can enter the name or the brand of the product they want. They can compare the quality and unit price among all the products and choose what product they want from the category.
  - Only a registered customer can make purchasing using credit card, money order or check. Secure server protects all information. A summary for the customer information and ordered products will be shown before submitting the order.
  - Customer who has ordered or purchased an item can check the status of the order in the 'Order Lookup' Section.

Administrator Module

- Manipulate records in the e-LSS database
- Administrator can add, update or delete products
- Can maintain the member's records and settle the order

3.2.2 Non-Functional requirement

Non-functional requirement are defined as constraints under which the system must operate and the standards, which must be met by the delivered system. The non-functional requirements of e-LSS are as follows:

1. *Security*

   Customer must login with the correct password to perform their tasks and to prevent unauthorized access into their account. The password can be changed whenever the customer wants to. For administrator, they have to login directly into the database before accessing it.

2. *Robustness*

   Refers to the quality that causes a system to be able to handle, or avoid disaster in the face of unexpected data. e-LSS supports robustness by developing a program logic to process anticipated errors in the inputs.

3. *User-friendly*

   Customers only have to click on the hypertext or image by using mouse. Grouping of the products makes customer easier to get and compare what products they want.

4. *Accuracy*

   Refers the precision of computations and control. e-LSS provides various accuracy measures. For example, e-LSS calculates the amount of the total products ordered by customer.

5. *Response time*

   To retrieve the information such as products' information can be considered within a reasonable interval time.

3.3 Run-time Requirement

3.3.1 Server Hardware Requirements

The server computer requirements are:

- A server with Pentium II 233MHz processor
- 64 MB RAM
- Other standard computer peripherals

3.3.2 Server Software Requirements

To host the system, the server computer needs to have various supporting software installed.

- Network operating system - Windows NT Server 4.0 or above
- Web Server Service - Internet Information Server 4.0 or better
- Server Scripting Engine- Active Server pages
- Database connectivity interface driver – Active Data Object

3.3.3 Client Hardware Requirements

The client hardware requirements are minimal as long it has a reasonable amount of memory and a dial up connection line. The recommended configurations are:

- 16 MB RAM (minimum)

- Network connection through existing network configuration or modem (recommended at least 14.4 kbps)

3.3.4 Client Software Requirements

The client software requirements fall on the browser used by users. It requires a system that can run Microsoft Internet Explorer 4.0 above or Netscape Communicator.

3.4 Tools Used

3.4.1 Web Application Development Tool

Microsoft FrontPage 2000

Using Microsoft FrontPage 2000 is the easiest way of creating and managing professional-quality Web sites. With just a mouse click, we can create great-looking, interactive and creative Web sites using FrontPage 2000. FrontPage 2000 Web site creation and management tool gives users control of their Web sites. They can give their Web site a professional and consistent look across all pages, import and edit HTML just as they like, and use the latest in Web technology. Why FrontPage 2000 is used in this project:

- Makes site management easy, can set up and maintain their site as a whole, and make updates
- Supports the latest Web technology such as ASP, ActiveX, and many more for form processing and form interaction.
- FrontPage 2000 will update the Navigation Bars automatically, saving users time and keeping the current links
- The Navigation View lets user create and manage the navigational structure of Web site within seconds
- Makes adding forms and databases into sites easier.
- Provides a range of scripting features that are compatible with JavaScript and Visual Basic Script
- Giving the user a choice to edit the HTML coding in different frames. For user who are experienced in HTML coding, this as an added advantage of the software where the user need not to modify the pages individually but in different frames where it shows more pages.

3.4.2 Database Management System

Microsoft Access 2000

This is the tool that is going to be used for the database in e-LSS as it has many simple and user-friendly features in building tables, queries, forms and reports that can be customized to suit project needs. This relational database tool can also be integrated easily with Microsoft FrontPage 2000. Together with ODBC driver for Access, both can retrieve data from database in client server based system. Why Access 2000 is used:

- Making Information Easy to Find and Use: Access 2000 continues to offer an easy-to-use tool for easily finding information that provides consistency and integration with the other applications in the Office suite
- Access 2000 allows generating, analyzing and creating reports fast. It integrates ease of use from the data entry point to printing in HTML.
- It is very compatible the server side script that is going to be used that is Active Server Pages (ASP), which will be described later.
- Provide concurrent help by assisting users in answering their question

3.4.3 Network Operating System

Windows NT Server 4.0

On Windows NT, the operating system accommodates server software such as a web server. The ability to specify which user a service logs in as provides a significant advantage over the Windows 95. Windows NT 4.0 comes with its own Web server software, Internet Information Server (IIS), and HTML authoring software, so setting up an Internet site can be very simple. Windows NT is much more accessible to the average user. The reason why Windows NT is used as operating server:

- It is more robust, which means that it is less likely to become unstable if an application terminates abnormally or behaves in an unexpected manner, and supplies a great deal of flexibility and security
- Windows NT Server 4.0 was designed to help developers build and deploy business applications faster than ever before

- New management tools in Windows NT Server 4.0 helping to set up Web sites, manage content, and analyze usage patterns to improve site as it evolves
- Multiple Web sites on a single machine, innovative Web publishing features, customizable tools, and new wizard technologies make Windows NT Server 4.0 the best platform to publish and share information securely over corporate intranets and the Internet
- Windows NT Server is a high-performance, reliable, secure, and easy-to-manage server for sharing information and running applications in the most demanding businesses.

3.4.4 Web Server

Microsoft Internet Information Server 4.0

Microsoft Windows NT Server 4.0, with its built-in Web server Internet Information Server (IIS) 4.0 is the easiest way to publish information and bring business applications to the net especially for those who want to sell online. The reason IIS is used because:

- Innovative Web publishing features, customizable tools, and new wizard technologies, make Windows NT Server with IIS 4.0 the easiest way to publish and share information securely over the Internet
- Customizable management tools, flexible administration options, and analysis tools make Windows NT Server with IIS 4.0 the easiest Web server to manage
- Powerful management tools in IIS 4.0 will help to easily maintain Web sites, manage content, and analyze usage patterns to improve site as it evolves.

3.4.5 Scripts

Server Side Script

Active Server Pages (ASP)

Active Server Pages are not static pages, but rather they are dynamically produced from information stored in a database. Each time the database is updated, the web site is updated. Active Server Pages is a programming environment that provides the ability to combine HTML, scripting, and components to create powerful Internet applications that run on server. Users can create an HTML interface for an application by adding script commands to the HTML pages and encapsulate it for

business logic into reusable components. These components can be called from script or other components.

Why ASP is used as server side script:

- Creating an ASP requires only standard knowledge of HTML, that is a person who knows HTML will find ASP easy to learn. ASP combines HTML with script in the same file for better application flow.
- Because the scripts are processed on the server, user does not have to worry about the browser's script capabilities.
- ASP support VBScript and JavaScript. ASP provides easy access to databases via ADO (Active Data Object) that is the new database object model.
- ASP development is compile free (does not require a compiler)

Client Side Script

Visual Basic Script (VBScript)

VBScript scripting language enables us to embed commands into an HTML document and it has been designed to make it easier to develop client-side Web applications that run on the Web browser. VBScript is an interpreted script language from Microsoft that is a subset of its Visual Basic programming language. Internet Explorer 3 interprets the VB Script commands when they are loaded and run. They do not need to be compiled into executable form by the Web author who uses them. Why VBScript is used as client side scripting:

- VBScript can be used to develop richly interactive Web pages that respond to user input in an intelligent manner. In the case of a server-side application, VBScript can be used to process data submitted by users with the aid of ActiveX controls specially designed for Microsoft Active Server Pages.
- VBScript is very compatible with ASP, the client side script for this project.
- VBScript code is lightweight, fast, and has been optimized to be transmitting via the Internet.

- VBScript is easy to use compared to scripting languages such as JavaScript. VBScript is easier to use because it is based on the easy-to-learn BASIC (Beginner's All Purpose Symbolic Instruction Code) language.

3.4.6 Other Related Software Tools

Other related software used:

1. **Notepad** for modifying HTML and ASP pages.
2. **Internet Explorer 5.0** and **Netscape Communicator 4.5** as the browser to view web pages.
3. **Paint Shop Pro 5.0** to create attractive images for the web pages.
4. **Microsoft Word 2000** for project documentation.

3.5 Justification

The approach that will be used to develop e-LSS is the prototyping model.

3.5.1 Why Use the Prototyping Model

As depicted in Figure 3.1, the prototyping model was chosen for the development of e-LSS because of the following reasons.

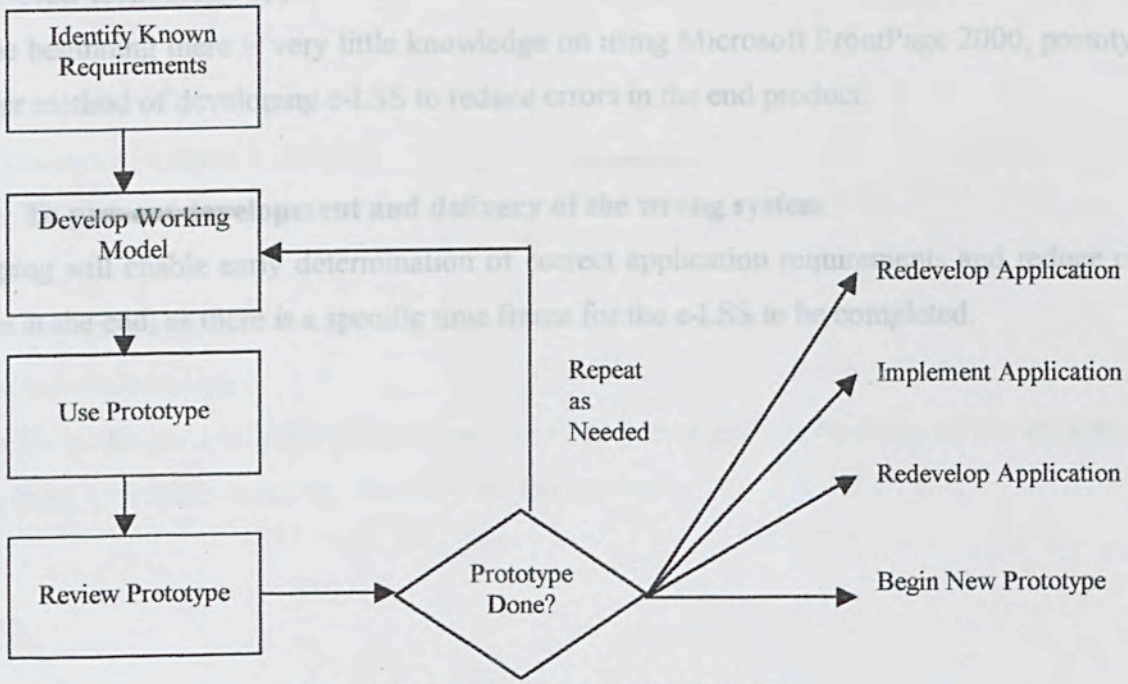


Figure 3.1 : The Prototyping Model

3.5.1.1 Availability of widespread automated development tools and relational databases

This can reduce the time of creating prototypes. Thus, iteration can occur and yet will not affect the project schedule as compared to the conventional development methods. e-LSS will make use of this fact by using Microsoft FrontPage 2000 as the development tool and Microsoft Access 2000 as the relational database tool.

3.5.1.2 Prototypes are relatively inexpensive to build

The cost of building many prototypes is still less than building a fully working application at the end of a development method only to find out that it does not fulfill the requirements and thus needs to be rebuilt.

3.5.1.3 Requirements not known specifically and need evaluation

Being a web-based application, e-LSS needs to have proper GUI that will be attractive and user-friendly. As different users may have different views on this, it is difficult to specify exact requirements at the beginning. The initial known requirements need to be developed, tested and evaluated for further development activities to occur.

3.5.1.4 New technology used

As at the beginning there is very little knowledge on using Microsoft FrontPage 2000, prototyping is a better method of developing e-LSS to reduce errors in the end product.

3.5.1.5 To prevent development and delivery of the wrong system

Prototyping will enable early determination of correct application requirements and reduce costly mistakes at the end, as there is a specific time frame for the e-LSS to be completed.

3.5.2 Why Not the Waterfall Model

There are several reasons for not choosing the waterfall model to develop e-LSS as described below.

3.5.2.1 Does not reflect the way code is really developed

This is because there is no iteration. One development stage should be completed before the next begins. Except for very well understood problems, software is usually developed with a great deal of iteration. e-LSS too needs to go through iteration to ensure that it is being developed correctly.

3.5.2.2 Centers around planned work

Thus, this method is best suited for projects where the requirements can be clearly defined. e-LSS is not such a project. Its requirements are known but may change according to user needs when tested.

3.6 System Planning

In the development of the project, system planning is the most critical part. This is the stage in the system development process whereby the requirement for the system is translated into system characteristics.

The stages in system planning are:

- Architectural Design
  The sub-system making up the relationship is identified and documented.
- Database Design
  The data structures used in the system implementation in detailed and specific.
- User Interface Design
  Service is allocated to different component of the system and the interface of the component is designed. This enables user to interact with the system.

3.6.1 System Architectural Design

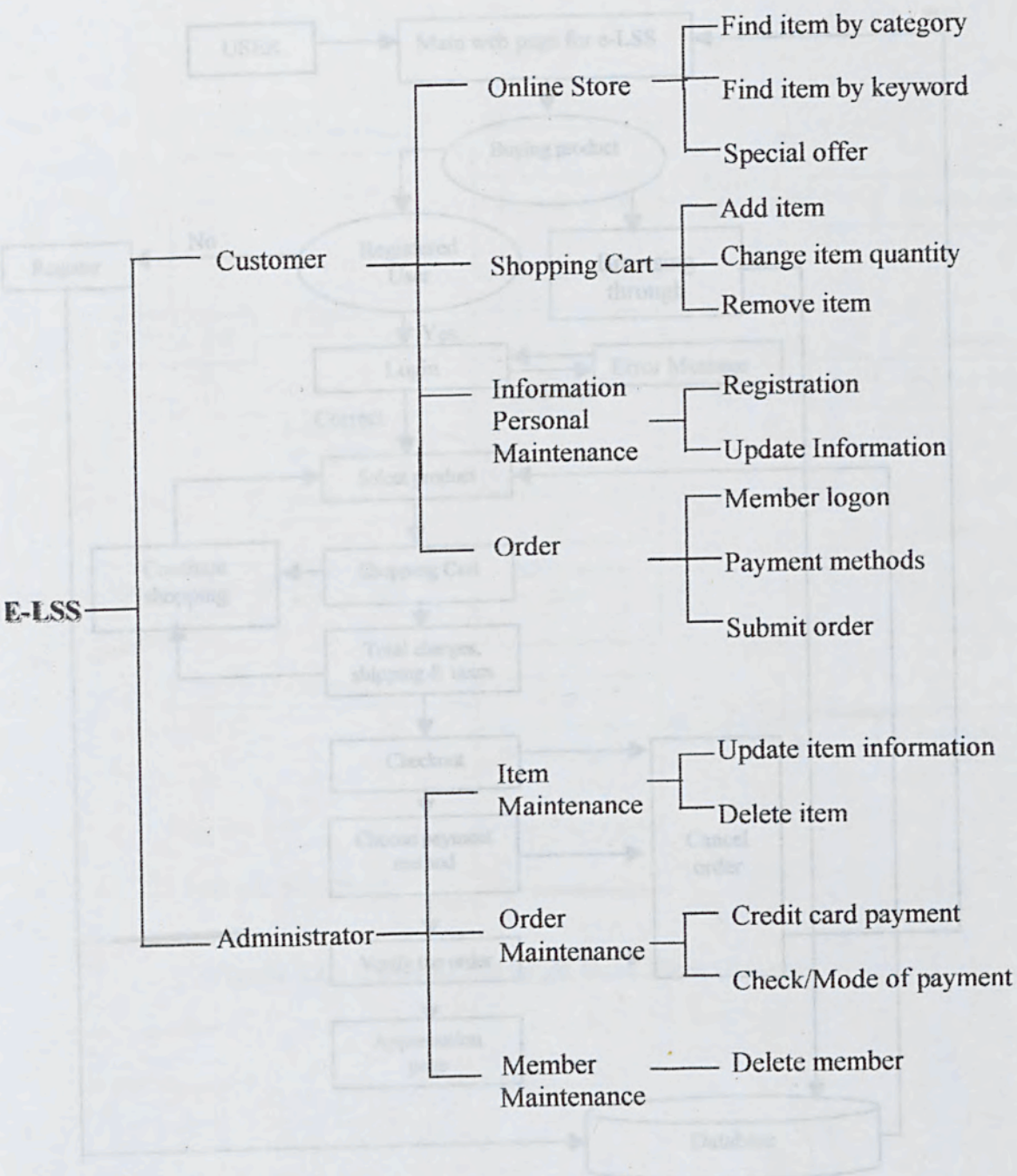


Figure 3.2: System Architectural Design

3.6.1.1 System Design for e-LSS

Figure 3.3 below shows the context data flow diagram for e-LSS.

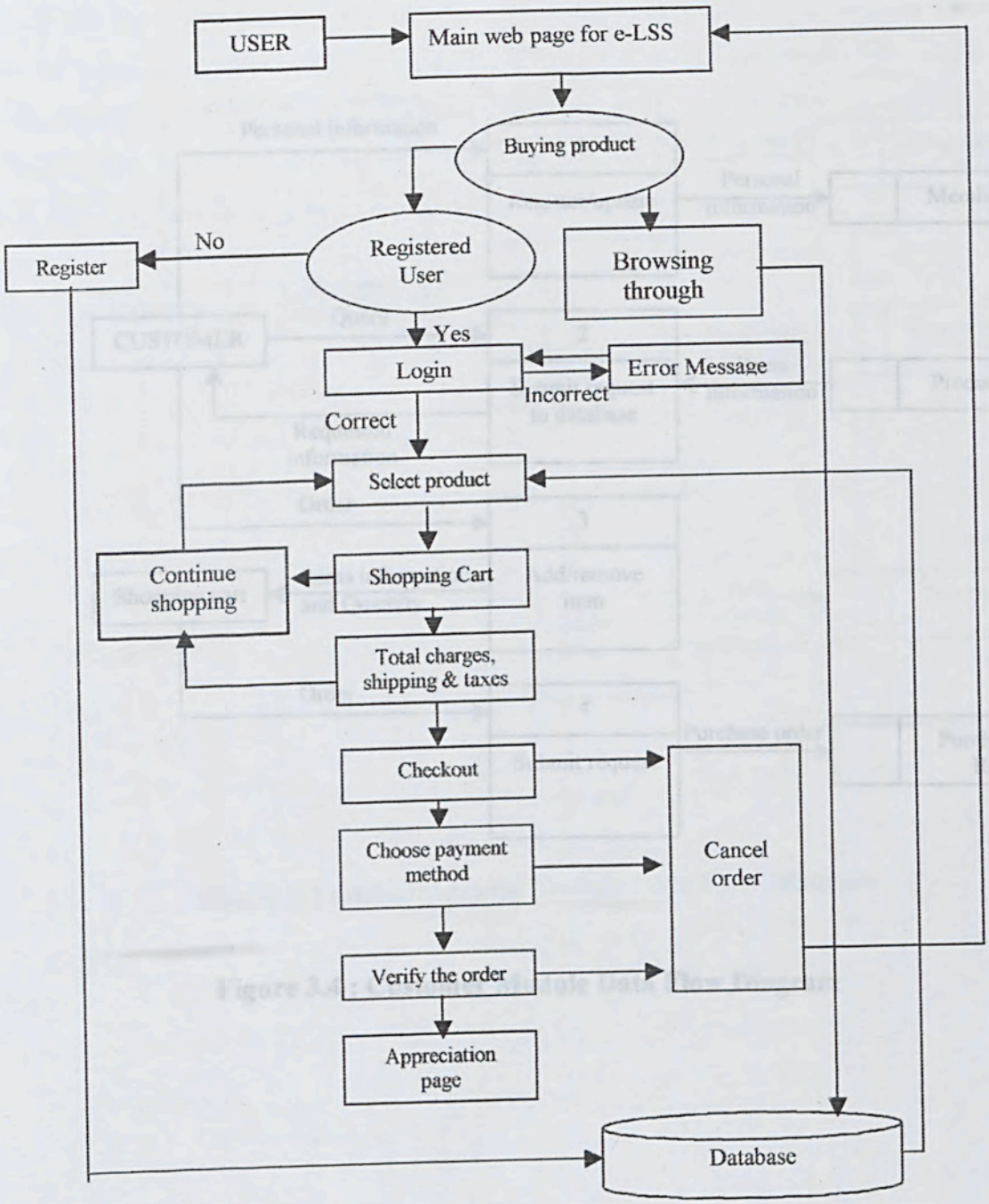


Figure 3.3: Data Flow Diagram for e-LSS

3.6.1.2 Customer Module

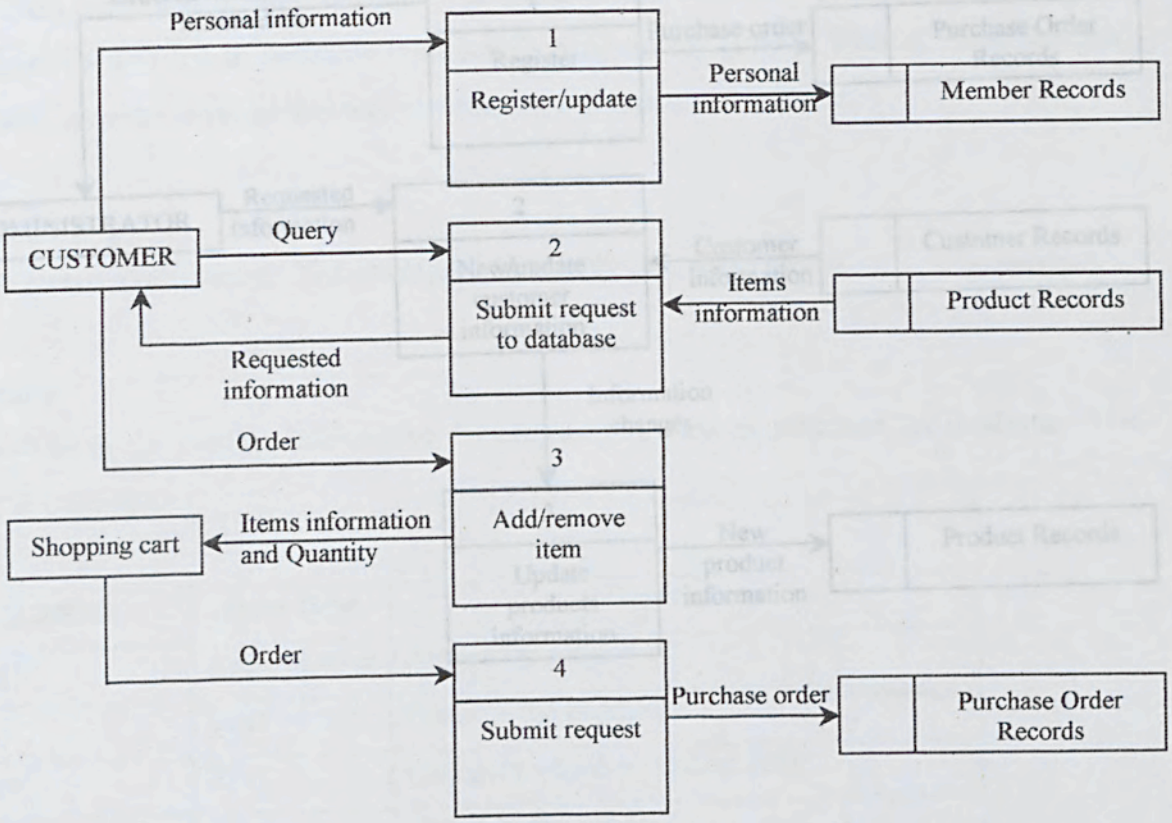


Figure 3.4 : Customer Module Data Flow Diagram

3.6.1.3 Administrator Module

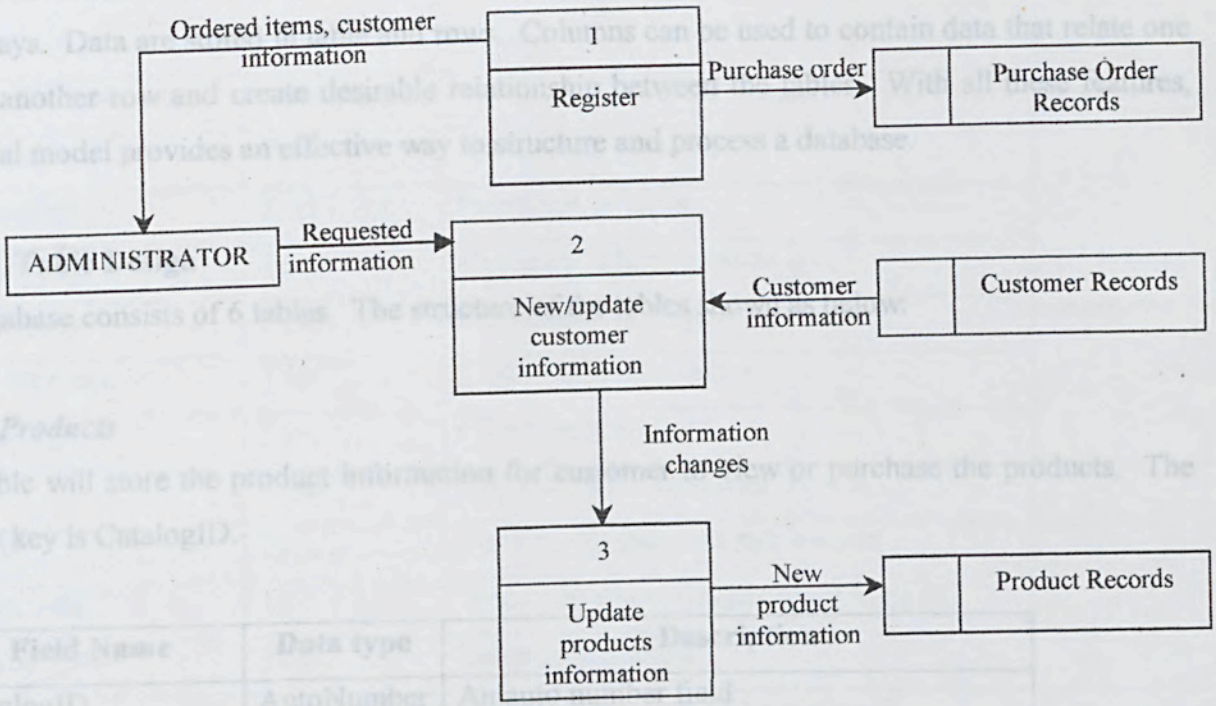


Figure 3.5 : Administrator Module Data Flow Diagram

3.6.2 Database Design

The database is developed using Microsoft Access 2000. e-LSS uses the relational database model in its database implementation because it enables data to be stored in a way that minimize duplicated data and eliminates certain type of processing error that can occur when data are store in other ways. Data are stored in table and rows. Columns can be used to contain data that relate one row to another row and create desirable relationship between the tables. With all these features, relational model provides an effective way to structure and process a database.

3.6.2.1 Table Design

The database consists of 6 tables. The structure of the tables shown as below:

(i) Products

This table will store the product information for customer to view or purchase the products. The primary key is CatalogID.

Field Name	Data type	Description
CatalogID	AutoNumber	An auto number field
Code	Text	Code of the product
Category	Text	Category which a product falls
Brand	Text	Brand of the product
Model	Text	Model of the product
Description	Text	Description of the product
Price	Currency	Price of the product
Picture	Text	Picture of the product

(ii) Customers

Customer personal particular are store in this table when customer enter their information. The primary key is LoginID.

Field Name	Data type	Description
LoginID	Text	Customer's login ID
Password	Text	Password to login
FirstName	Text	Customer's first name
LastName	Text	Customer's last name
IC_Number	Text	Customer's IC number
Address	Text	Customer's address
City	Text	City where the customer lives in
State	Text	State where the customer lives in
PostCode	Text	Post code where the customer lives in
Phone	Text	Telephone number
Email	Text	Customer's e-mail address

(iii) Orders

This table stores the payment information, shipping address and shipping method of a customer who purchased a particular product. The primary key is OrderID.

Field Name	Data type	Description
OrderID	AutoNumber	Order number
CustomerID	Text	Customer's login ID
Date	Date/Time	Date ordered
ShippingAddress	Text	Shipping address if different
ShippingCity	Text	City
ShippingState	Text	State
ShippingPostCode	Number	Post Code
ShippingCountry	Text	Country
PaymentMethod	Number	Payment Method
OrderAmount	Currency	Total amount of items ordered
PromisedShipDate	Date/Time	Date promised to be shipped
ShippedDate	Date/Time	Date the product is shipped
ShippingMethod	Number	Shipping method chosen by the customer
PayCardType	Text	Card type
PayCardNo	Text	Card number
PayCardName	Text	Card name
PayCardExpires	Date/Time	Expiry date of the card
LookUp	Memo	Status of the order

(iv) Order Items

This table stores the products purchased or ordered by customer. The primary key is OrderItemID.

Field Name	Data type	Description
OrderItemID	AutoNumber	An auto number field
OrderID	Number	Order numbers
Code	Text	Product code
NumberItems	Number	Number/quantity of items purchased
Size	Text	Size of the particular product

(v) Special Offer

This table stores all the products, which has special offer. The primary key is SpecialID.

Field Name	Data type	Description
SpecialID	AutoNumber	An auto number field
Code	Text	Product code
NewPrice	Currency	New price

(vi) Shipping Methods

This table stores the various shipping method available. The primary key is ShipMethodID.

Field Name	Data type	Description
ShipMethodID	AutoNumber	An auto number field
ShipMethod	Text	Shipping method
ShipMethodPrice	Currency	Shipping price

3.6.2.2 Form Design

Form plays as a tool of obtaining or capturing data in any information system. Forms are designed in the system development as it can be used for the basic of data entry screen design. Forms are designed for inputting data and for viewing the data on-screen because the administrator communicates with the database back to back directly, instead on the web. In e-LSS, several forms were designed in the database for the use of the system administration. Among the function of the form designed are to view, edit and delete.

3.6.3 User Interface Design

Interface design establishes the layout and interaction mechanisms for human-machine interaction. A small application on the Web are still very new and rare, there is hardly any "standard" way to design the layout. However, it is important to take into consideration of how users will interact with the web pages, as well as users needs and preferences.

There are two aspects of interface design. First is to choose the transaction in the business process to be supported by the interface. This will define the broad interface requirement in terms of what information to be entered and output through the interface during transaction. The second one is the design of the actual screen presentation including its layout and in fact the sequence of screens that may be needed to process the transaction.

3.6.3.1 e-LSS Screen design

Since e-LSS is a web-based application, its screen design is presented in the form of web pages. To generate a user-friendly interface, e-LSS screen design are formatted in a standard layout so that the various types of information and messages always appear in the same general display area. e-LSS is divided into 2 parts. The first part is the navigation bar, which is an index that guides user about the pages they are interested in, and the second part is the working area, which is the area where user input and displaying results take place. The space in the working area must remain to display information and messages.

CHAPTER FOUR

SYSTEM DEVELOPMENT AND TESTING

CHAPTER FOUR

SYSTEM DEVELOPMENT AND TESTING

4.1 System Development

System development is the process of creating the system needed to satisfy an information system requirement. The Figure 4.1 below shows the five steps in the system development.

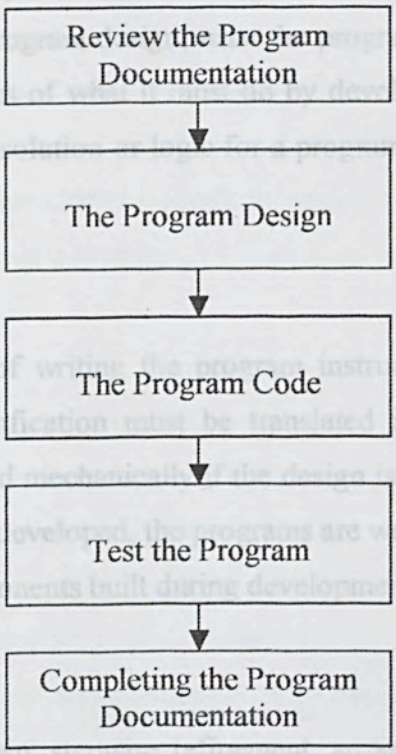


Figure 4.1 System Development

4.1.1 Review the Product Documentation

During the previous phases, review the product documentation was prepared. The program documentation catalogue system consists of simple process check, report layout, data dictionary entries and the source document. This document is to understand the work better that need to be covered during the coding phase.

4.1.2 The Program Design

The second level of system development that needs to be completed is the designing of the program. For this second level of program design, what the program can accomplish accordingly has been decide. This is the process of what it must do by developing a logical solution to the programming problem. The logical solution or logic for a program is a step-by-step solution to a programming problem.

4.1.3 The Program Code

The program code is the process of writing the program instruction that will implements the program design. The design specification must be translated into machine-readable format. Program coding can be accomplished mechanically if the design is performed in detailed manner. During this phase, user interface are developed, the programs are written and database is initialized with data. During coding, the components built during development are put into operational use.

4.1.3.1 Coding Approach

A program technique called top-down, stepwise refinement, an approach that is essential to the development of well-structured program. This approach enables the program terminated the top down, stepwise refinement process when the pseudocode algorithm is specified. This approach was adapted due to the dependency of the function to login in the module. [23]

4.1.3.2 Coding Style

The important attribute of source code is the style of the coding. The coding style determines the intelligibility of a program. The system is easily maintained if an easy-to-read source code is made. The enhancement of the system also can be done easily. The element of coding style

includes internal documentation (source code level), method for data declaration and approach to statement construction.

4.1.3.3 Coding Documentation

Coding documentation begins with the selection of identifier names, together with the composition of connectivity and end with the organization of the program. Comment can be identified or distinguished from the code by having blank line or indentation. Internal comment provides a clear guide during the maintenance phase of the system. Statement of purpose indicating the function of the module and a descriptive comment that is embedded within the body of the source code is needed to describe processing function. Naming convention is created with coding consistency and standardization in mind and provides easy identification for the programmer. In order to reduce complexity, facilitate changes result in easier implementation by encouraging parallel development of different part of a system.

4.1.4 Test the Program

In the level of testing the program, the program is tested thoroughly to ensure the program functions correctly and accordingly before the program processes the actual data and produces information, which will be relied by the user.

4.1.5 The Program Documentation

It is essential to complete the program documentation. Completing the program documentation will make the operation and maintenance of the information system successful. This documentation includes the system's user manual that may be useful by most of the customers as well as the system administrator.

4.1.6 Database connection

ADO (ActiveX Data Object) connection is used in this as a means of database connection. ADO provides program code accesses the database. ADO connects to a database through an OLE DB provider. OLE DB is Microsoft new lower-level database interface that provides access to many different kinds of data. The OLE DB provider exposes these data to ADO, which in turn allows connection to data using Data Control or Object interface.

4.1.7 Server Side Scripting

ASP is a server side script that is embedded in the HTML coding. As mention in the previous chapter, ASP codes are located within the delimiter <%...%> in the HTML script are invisible to the client and are executed in the server, hence named server side script. ASP is suitable in developing e-LSS and produce consistent result regardless of the browser used. Some of the ASP objects used in the development of this project are:

(i) Request Object

The request object is responsible for controlling how the user sends information to the server. Using the request object, the server can obtain information about what the user wants. When connecting to a Web server and requesting a document that is an ASP application, certain information about that transaction is available to the ASP application through this object. This request object gathers information from both the client and the server.

(ii) Response Object

The response object is responsible for sending the server's output to the client. In this sense, the response object is the counterpart to the request object. Response object is used to create dynamic pages such as creating static pages that are returned to a client browser when a specific URL is requested. The response object also can add and alter HTTP headers, dynamically build page bodies, and automatically redirect clients to alternative pages. [24]

(iii) Session Object

The session object is used to keep track of an individual browser as it navigates through the web site. Browser needs to keep track of certain specific user information as user moves from one section of the application to another.

4.2 System Testing

System testing is a critical element of software quality assurance and represents the ultimate review of specification, design and coding. It is often referred as verification and validation. Testing is a process of executing a program with the intent of finding an error. A good test case is one that has a high probability of finding an undiscovered error and a successful test is one that uncovers and as yet undiscovered error.

Figure 4.2 shows the stages in the testing process. The arrow from the top boxes indicates the normal sequence of testing. The arrows returning to the previous box indicates that previous testing stages may have to be repeated because of some problems occurred.

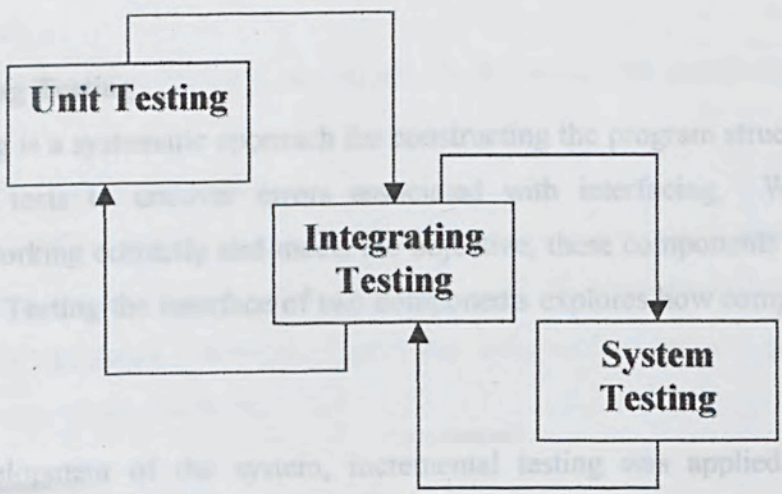


Figure 4.2 Testing Stages

The system has undergone 3 stages of testing and each testing will be described below.

4.2.1 Unit Testing

Unit testing focuses on verification on the smallest unit of software design in the module. This process enables to detect errors in coding and logical mistakes. Unit testing was done during the coding phase and it was eventually a time consuming for this project. Important control path are tested to uncover error within the boundary of the module. Testing involving interaction between modules is initially avoided.

The early steps to examine the program code are reading through it, trying to spot the algorithm, data and syntax fault. This followed by comparing the code with specifications of the design to make sure that all relevant cases have been considered. Finally, test cases are developed to show that the input is properly converted to the desired output.

4.2.2 Integrating Testing

Integration testing is a systematic approach for constructing the program structure and at the same time conducting tests to uncover errors associated with interfacing. When the individual component are working correctly and meets the objective, these components are combined into a working system. Testing the interface of two components explores how components interact with each other.

During the development of the system, incremental testing was applied. The system was constructed and tested in small arguments, where errors were easier to isolate and correct. Before processing to the next integration, errors will be corrected.

4.2.3 System Testing

The final phase of testing will be the system testing. System testing is designed to reveal bugs that cannot be attributed to individual components or to the interaction among component or to the interaction among components and other objects. System testing is performed after completion of coding for each module. This process ensures that all units in the module will function accordingly when integrated and have fully satisfied its functional requirements.

e-LSS has undergone 3 types of system testing:

(i) Security Testing

To verify the protection mechanism on the system against improper penetration.

(ii) Stress Testing

To determine whether a program has fulfilled the requirements designed for it. Also, important to make sure that program works, as it should be, even under extreme condition.

(iii) Performance Testing

It is designed to test the run-time performance of the system within the control of an integrated system. It occurs through all the steps in the testing process.

4.2.4 Test Result

From the testing process that has been carried out, the following test result can be summarized:

(i) Achieving the Project Objective

The main objective of the project as described earlier has been achieved. The system could handle and maintain the customers and product database. For the management, the various types of reports have been generated. Besides, it provides safeguard to prevent unauthorized users to access or modify the system database.

(ii) Enhancement on the user interface

In order to attract user to use the system, the user interface of the system should be more attractive and user friendly. It is highly important to make the user interface as easy to use as possible. This is because some of the user may not be computer literate, and they might be reluctant to use the system. Therefore, to improve the user interface, some graphics and attractive icons represent the button are used.

(iii) Enhancement on the product information

The product information must be clear which includes the picture and description of the product and also its functionality. This information can provide the overall clear picture for the customer, and also convincing the customer to purchase the product.

4.3 System Evaluation

At all phases of the system approaches, evaluation is a process that occurs continuously, drawing on a variety of sources and information. Evaluation of the system was implemented more than simply comparing obtained data with expected information. It was related to user environment, attitudes, information priorities and several other concerns that are to be considered carefully before effectiveness can be concluded.

The role of evaluation phase in the development of this software was to determine the extent to which the expected outcome have to be realized and the perspective value of the process where extraneous factors were taken into consideration.

4.3.1 Evaluation Technique

There are 3 techniques were used to conduct the evaluation at varying levels throughout lesson design and development. These techniques are:

(i) One-to-one Evaluation

It was conducted extensively during the initial information design and development. The procedures were informal and were mainly used to identify potential major problems associated with the planned information design.

(ii) Small Group Evaluation

It was conducted when e-LSS was almost completed. The reasons were to determine the information effectiveness and acceptability of the information.

(iii) Field Test Evaluation

This filed test evaluation was implemented when the information system was believed to be of the final draft quality. If problems were identified, additional changes might be made. However, the

informal evaluations conducted at this point should ensure that the information system is completed or minimal changes will be required.

4.4 Project Schedule

All the above steps in the development strategy have to be completed within a time constraint. In this time constraint, the documentation of the project should also be completed. The overall schedule of the completion of the project is shown in the Table 4.1.

Key Activity	Duration									
	Nov 1999	Dec 1999	Jan 2000	Feb 2000	Mar 2000	Apr 2000	May 2000	Jun 2000	Jul 2000	Aug 2000
Literature Studies										
System Analysis										
System Design										
Coding										
Testing										
Documentation										

Table 4.1: Project Schedule for e-LSS

CHAPTER FIVE

DESCRIPTION OF SYSTEM

CHAPTER FIVE
DESCRIPTION OF SYSTEM

5.1 Features of System

Some of the features in e-LSS includes:

(i) Easy Navigation

This site provides easy navigation for user to browse from one page to another.

(ii) Customer Authentication

User must login before purchasing a product. User will be automatically redirected to a login page before checking out or purchasing a product.

(iii) Browsing Product

Browse products according to ladies category.

(iv) Register

New user who wants to purchase must register and obtains a login name and password.

(v) Shopping Cart

Retain the contents of a cart, compute total price, shipping and handling of the order process.

(vi) Member Service

Member service provides guidance for customer who has difficulties in placing an order for a product and guidelines of ordering a product.

(vii) Search

This section will allow users to search for a particular ladies product according to category, brand, model, and description. They will also be allowed to type a keyword to narrow down their search.

(viii) Contact

Allows user to contact the store for assistance via e-mail.

(ix) Order Lookup

Ability to trace the status of an ordered products made by the customer.

(x) Database Administration

Administrate the database directly in the database instead on the web. It has security, which only allow administrator or user group to access it.

5.2 System Strengths

5.2.1 Simple and User Friendly Interface

e-LSS provides easy-to-use graphical user interface and user friendly for user to interact with it. In addition, the web pages are designed to suits a wide spectrum of user. The users are not necessary ladies, but men can also participate. Only minimum typing and inputs needed from a customer when interacting with the system. Besides, the instruction and guidance are sufficient to guide and assist the user. As for example, error messages will be displayed to guide user whenever invalid user input are encountered by the system.

5.2.2 Login ID and Password

e-LSS is a password-protected site. By giving authorize user a LoginID and password, unauthorized user are prohibited from accessing its records stored in the database.

5.2.3 Easy to Make an Order

e-LSS simplifies the process of ordering by providing shopping cart, quick order facilities, and shipping. Shopping cart facility keeps track of the selected item made by the customer when browsing and putting the products into the shopping cart. The content in the shopping cart facility can be modified to meet the satisfaction of the customer such as changing the quantity of the particular items or removing the items from the list. To ensure the accuracy and correctness, e-LSS will automatically recalculate the content of shipping cart when customer decides to check out.

5.2.4 System Transparency

System transparency refers to the condition where the users do not need to know where the database resides, how the system is structured, its database management system and so on. As for example, users do not have to know how to retrieve and insert record into the database. All they need to do is submit data and view the query result.

5.2.5 Error Messaging

In e-LSS, if invalid user input encountered, the error messages are immediately displayed when the button is clicked. Message box or error pages will be displayed to allow and assist user to identify their errors effectively.

5.3 System Weaknesses

There are some limitations in e-LSS system due to time constraints, facilities, constraints and limitation of the program language itself. These include:

5.3.1 Lack of Supplier Facilities

Due to time constraint, the supplier module is not included in the e-LSS. The products are not well managed because lack of management information of the products from the supplier.

5.3.2 Lack of Security Features

Security features are not included in the online payment due to time and facility constraint. It does not have a merchant account that connects to the bank for payment. Therefore, there is no any payment protocol or Internet security involved such as SSL (Secure Socket Layer) or SET employed.

5.3.3 No Reordering Facilities

Reordering facilities are not included in the e-LSS due to time constraint. Customers cannot order with their previous order list or shopping cart. In e-LSS, customers can only view their previous purchase history from the store. The customer cannot directly pick the entire item in the previous order and add them to the shopping cart for reordering.

5.4 Future Enhancements

There are several enhancements that could extend the usability of the developed system. Some of the future enhancements that should be considered to be included in this project are:

5.4.1 Supplier or Dealer Information

Supplier or dealer's information should be included in the database. This is to keep track of the stock control of the product and its quantity. Managing the information of the products will easily maintain by the supplier. The database will includes the supplier name, address, products supplies, stock-in, stock-out, dealer's price and so on.

5.4.2 Security Enforced

Enforce security feature in payment module by enforcing SET or SSL technology to verify the customer credit card number or PIN number. By having this technology, customer identification can be recognized by the banking system and therefore online payment can be made. This is also can reduce the possibility of fraud. Besides, customer payment information can be guaranteed safe and will not be intercepted by other unauthorized party since encryption technique is provided by the SSL or SET technology.

5.4.3 Capability of Reordering

Enhancing the customer order history modules and adding a new module called order shopping list module in e-LSS could provide reordering facility. Customer order history module should be further integrated with shopping cart module to enable customer to pick their preferred items from the previous order and add it to the shopping cart. This can be implemented using cookies. Besides, customers should be able to rename the order ID with more meaningful name and reorder it by just clicking it.

5.4.4 Software Upgrade

Microsoft Access 2000 is used for the database development tool. In the future, this software is likely to be replaced by higher performance and more stable database platform such as Microsoft SQL Server.

5.4.5 Report Generating and Printing

e-LSS should provide printing facility without relying in the browser's print out function. It should print out the order summary, bill, and other reports and documentation. With its own printing facility, the layout of the printout documents will have better control and quantity.

5.5 Problems Encountered and Solution

Some problems were encountered during the development of e-LSS. These include:

5.5.1 Problems with selection of tools

The exposure of knowledge in web based programming language is very limited. Therefore it was difficult to select the most appropriate programming language and tools for the development. To gain more insight of web-based programming and identify the most appropriate approach to develop e-LSS, in depth studies and research on the web based programming language was carried out in earlier stage of development. The studies and research activities including internet surfing, reading magazine and books.

5.5.2 Lack of knowledge in the language

Without a strong base of the language, a lot of time spent in searching for solution to solve problem that were occurred during development of e-LSS. This happens to cases related to concept of programming language that are new such as session and response object.

5.5.3 Difficulty in choosing an appropriate Operating System

There were some difficulties in choosing the appropriate Operating System to host and to develop the system. The options for developing the system are Windows 95/98, Windows NT, Linux and Unix. Because of limited facilities to the Linux and Unix system in the faculty, therefore this system was not implemented in this project. Windows 95/98 is not a reliable system as it is unstable for hosting an e-commerce site. Therefore Windows NT was used for it is the most stable and robust Operating System available and was used for the development of this project.

5.5.4 Slow response time

Some of the modules in e-LSS such as shopping cart module need to be able to response in minimum amount of time. If all the information such as list of favorites items of each user is stored in database, the response time will be very slow and thus favorable. In order to speed up response time, personalize favorite item list stored in session object. With the session objects, the item list could be easily retrieved as long as the user session is not ended. This helps to save the storage to the database.

CONCLUSION

Electronic Ladies Shopping Store (e-LSS) is a start to computerize the transactions in the business organization. Developing the whole e-LSS system is not very easy task to cope because various objectives has been aimed, but it still can be considered as a contemporary effort to achieve the goal. Overall, e-LSS has achieved and fulfilled the objectives of the system.

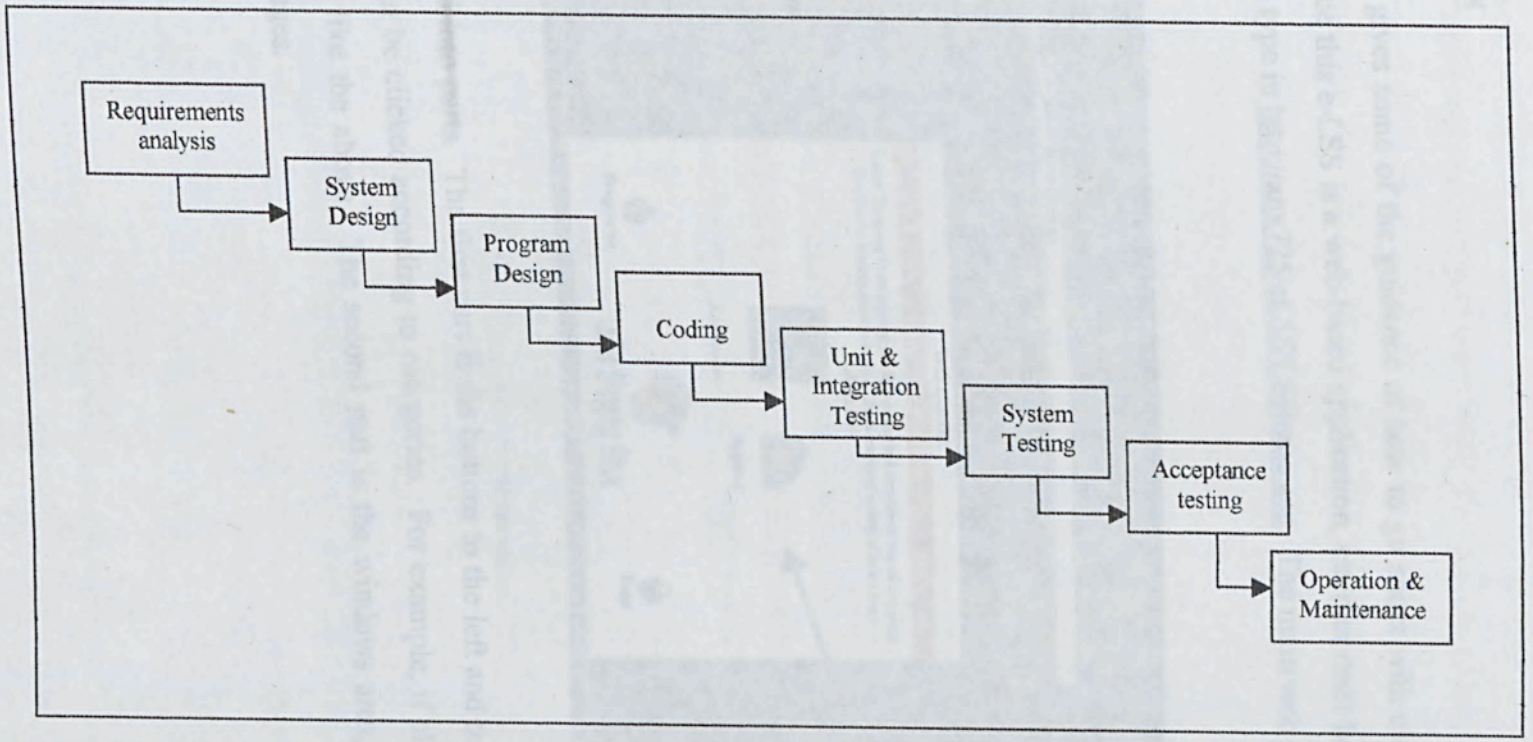
Throughout the development of e-LSS, there was a lot of experience and knowledge gained. These include knowledge gain in client/server systems in the Internet environment, Internet technologies, programming and concepts as well as configuring a web server. Programming in ASP, HTML and VBScript proves to be a valuable experience. But while programming skills and techniques are important in developing the system, it must not be discounted that in any system development, good software engineering techniques must also be applied. The application of software engineering principles throughout the development has served to further enhance the required skills for developing a sound system.

Finally, it is hoped that this system can provide a foundation upon which many more innovative and comprehensive system may be built to perform multiple task and fulfill various user requirements.

APPENDICES

APPENDIX 1

Waterfall Model

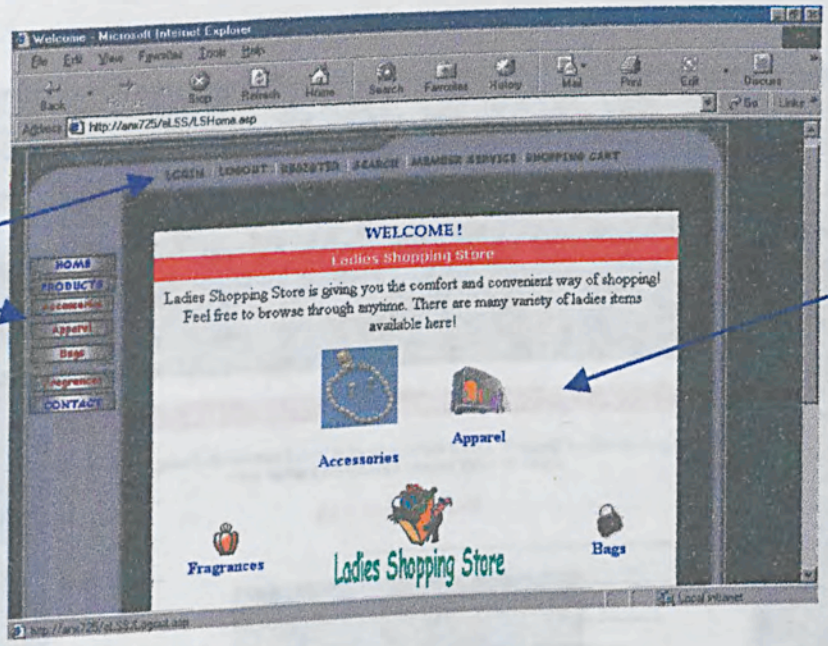


APPENDIX 2

USER MANUAL

INTRODUCTION

This User Manual gives some of the guidance of how to go about with electronic ladies shopping store (e-LSS). Since this e-LSS is a web-based application, internet must be always connected. To upload this system, type in http://anx725/eLSS/LSHome.asp. The main web page is shown below.



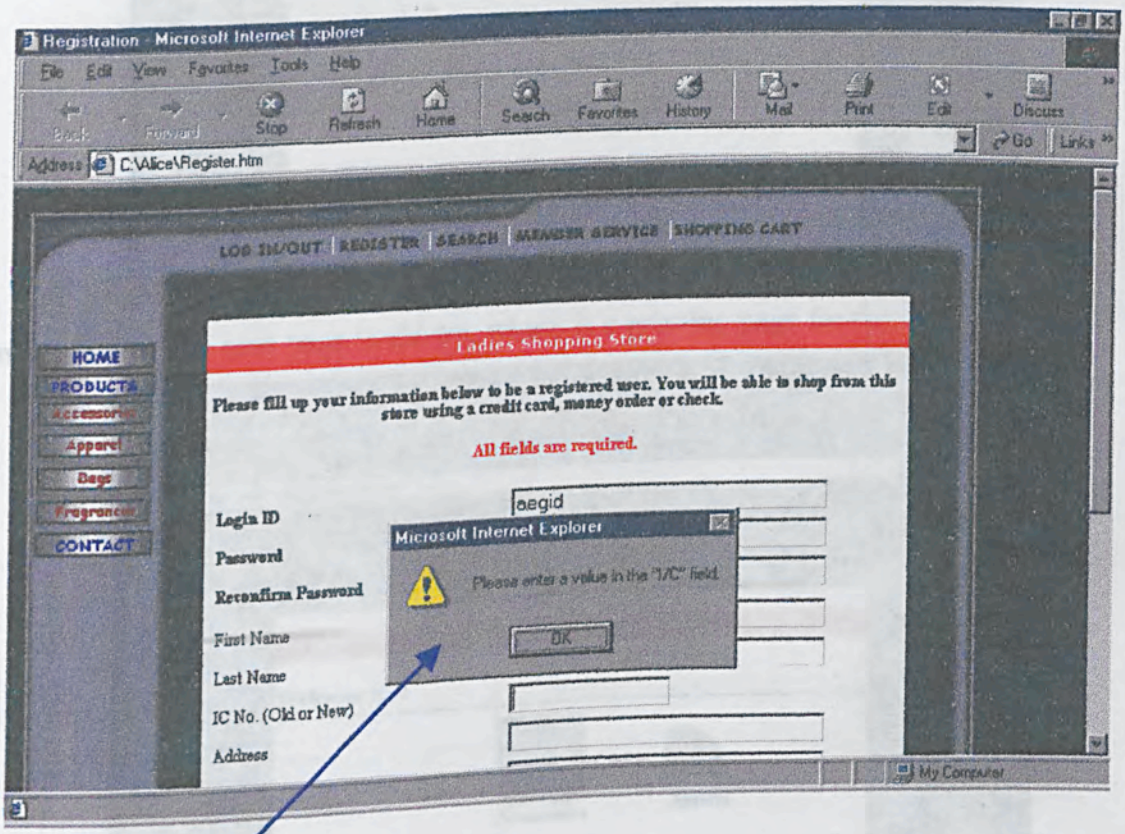
Button Navigator

Windows Area

This page is divided into parts. The first part is the buttons to the left and to the top to navigate the site. The button can be clicked according to categories. For example, if click the HOME bar, the page is shown just like the above. The second part is the windows area, which can be clicked according to the images.

REGISTER

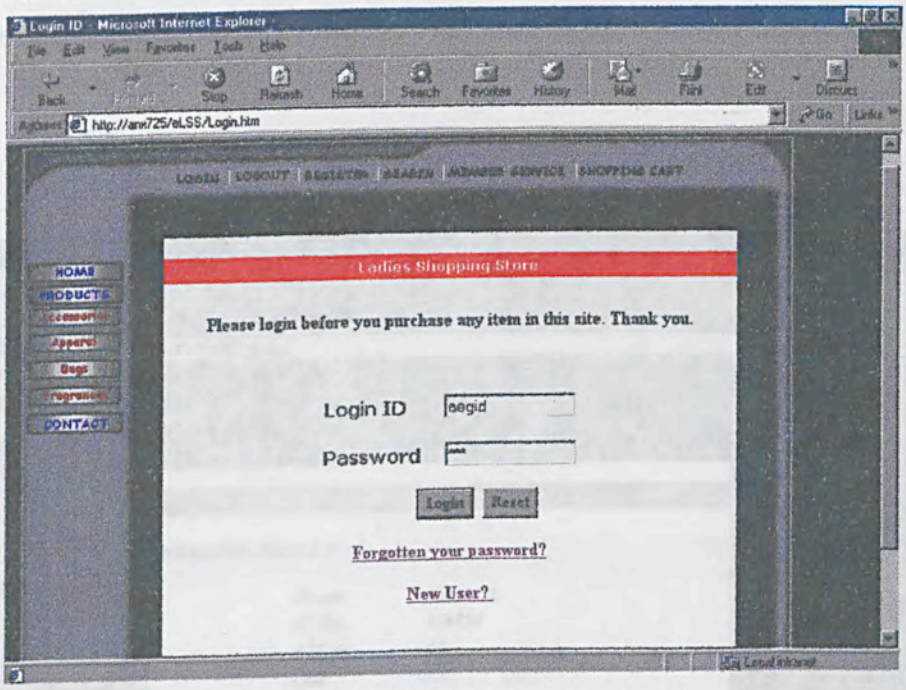
To be registered as an authorized user, user must register by clicking the register button. To shop with e-LSS, user must be registered to have a login ID. The register page is shown below. Since all the fields are required to fill in, there will be an error message displayed to guide which field has not been filled in. After filling in the form, a unique login ID and a password will be used to log on into e-LSS.



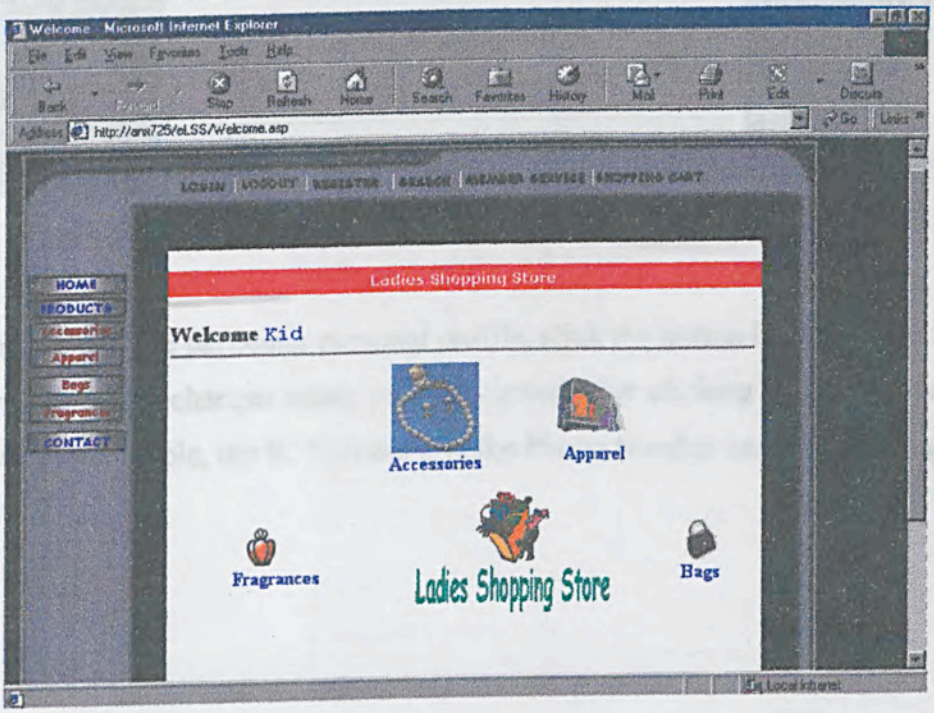
Error Message

LOGIN

To log on with e-LSS, click the LOGIN button. The login ID must be the same with the login ID that have been registered, and the same password as well.

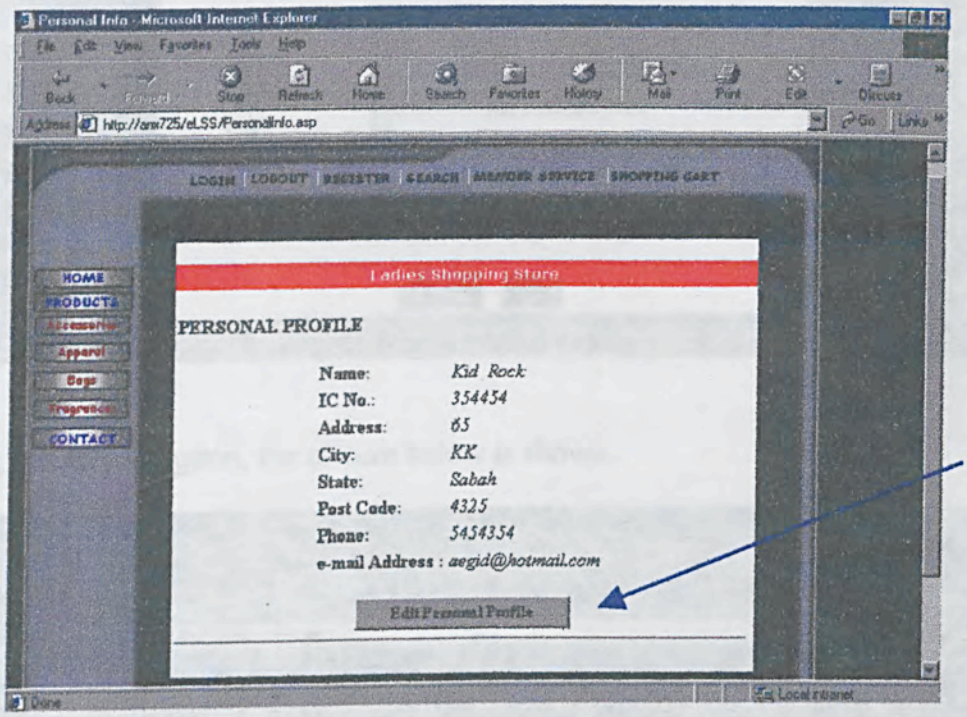


If login successful, the next page is shown, which is a greeting page for the authorized user.

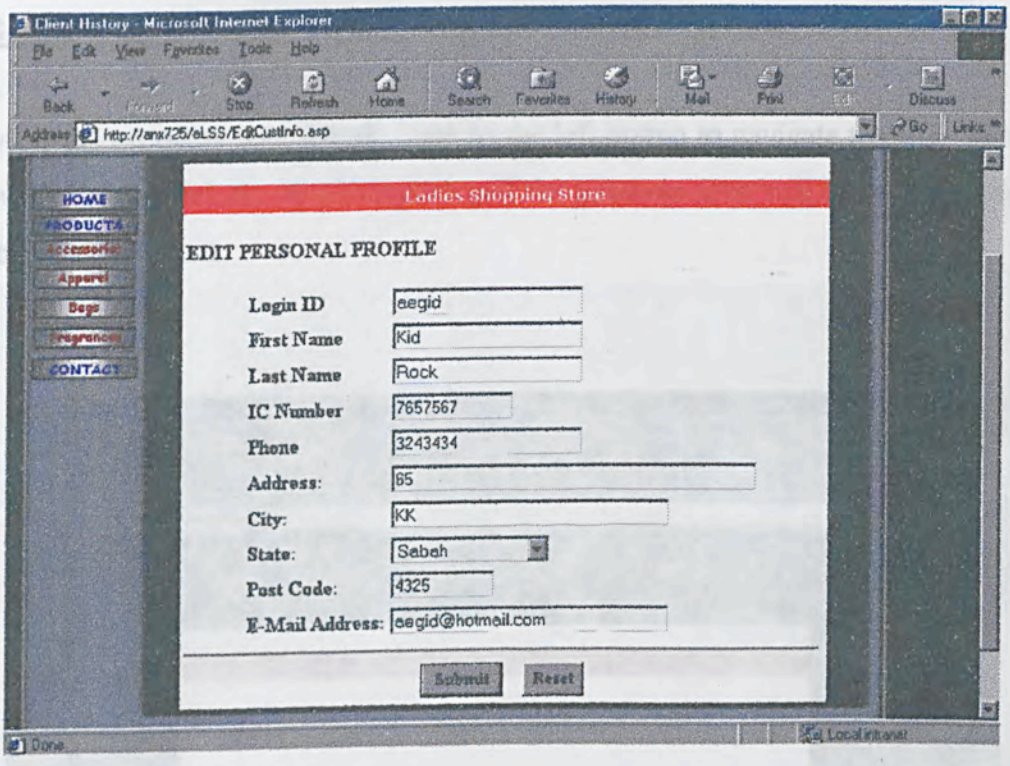


USER PERSONAL PROFILE

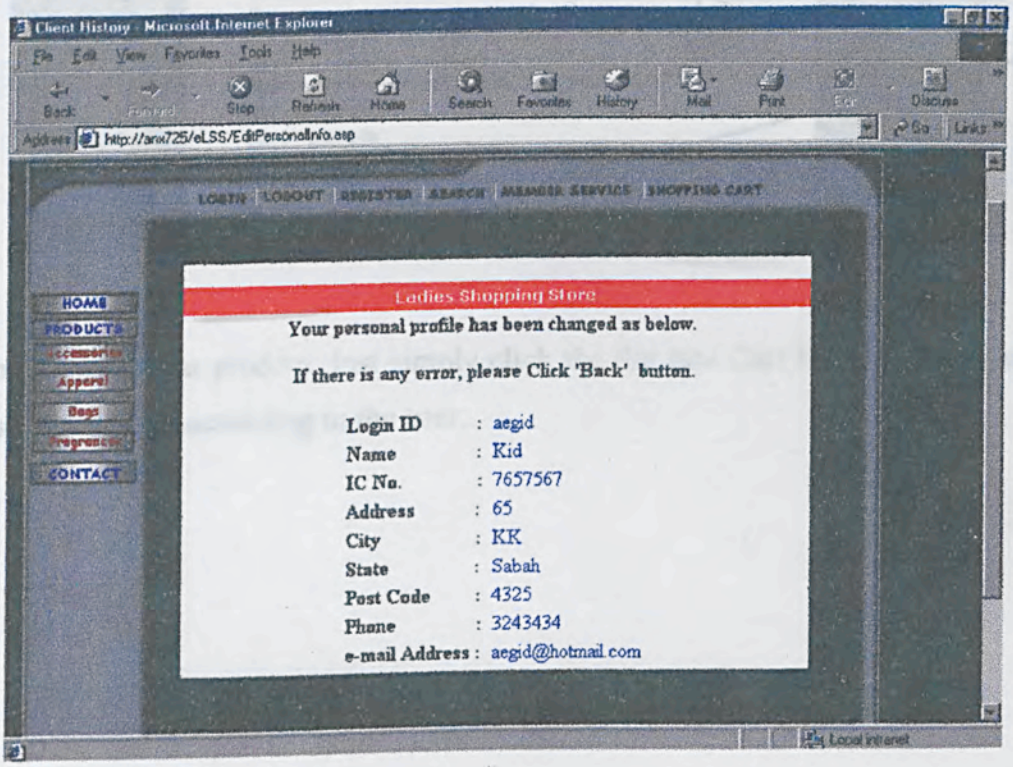
User can view and edit their personal information by clicking the member service button. In the member service page, click the Personal Profile. The picture shown below is the user Personal Profile.



If want to change or edit the particular personal profile, click the button Edit Personal Profile. In the edit personal profile page, changes made will be viewed after clicking the submit button. This is shown as below. For example, the IC Number and the Phone Number have been changed.

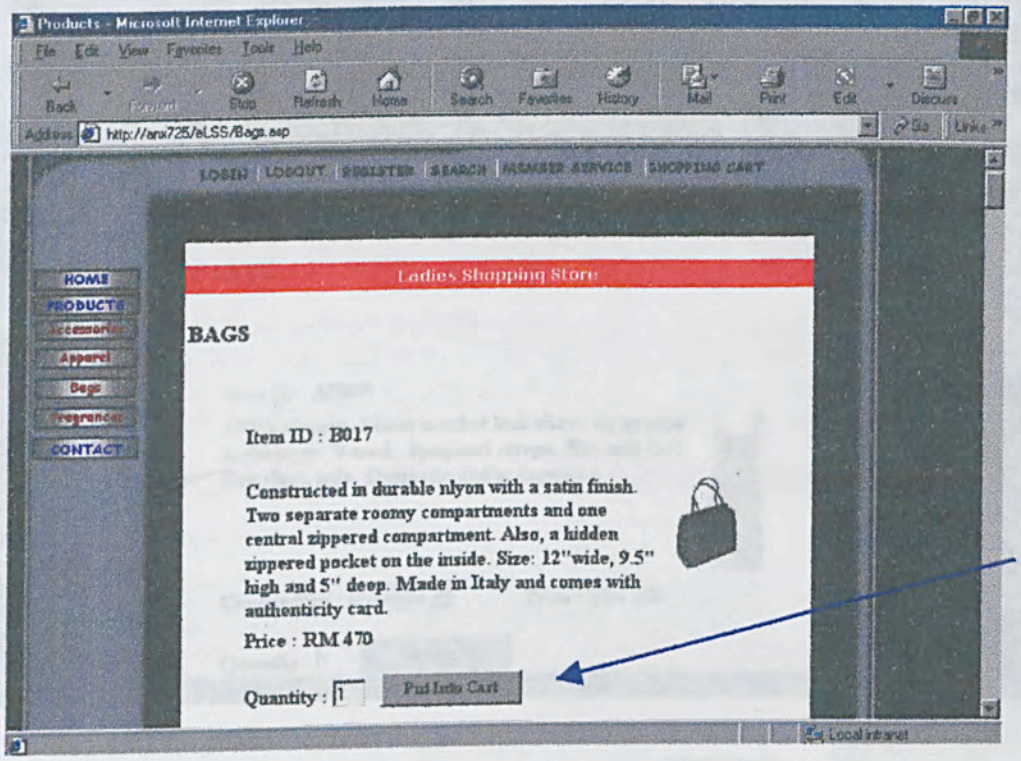


After clicking the submit button, the picture below is shown.



VIEWING THE PRODUCT

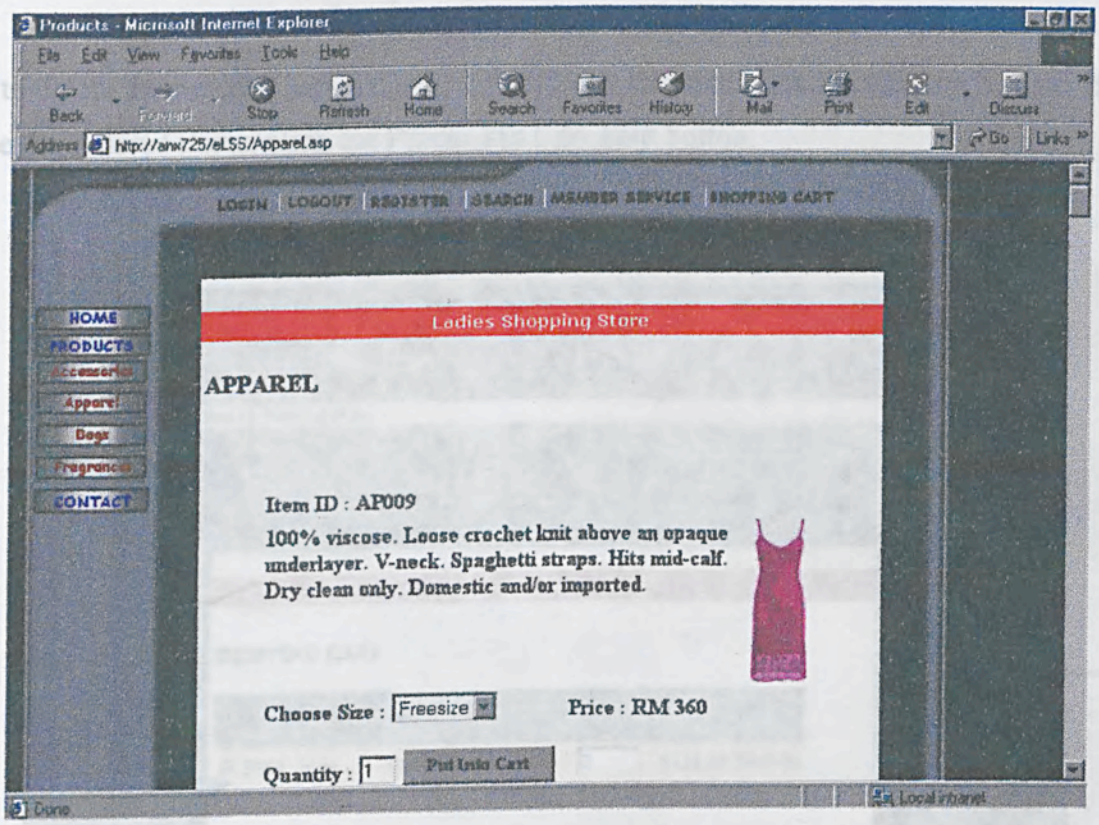
If want to view the products, just simply click to the left button to navigate the site. For example, if want to view the bags, click the BAGS button and the windows area will be shown as below. Same goes with the other products.



Put Into Cart Button

If want to buy a particular product, just simply click the Put Into Cart button. The quantity of the item can also be changed according to the user.

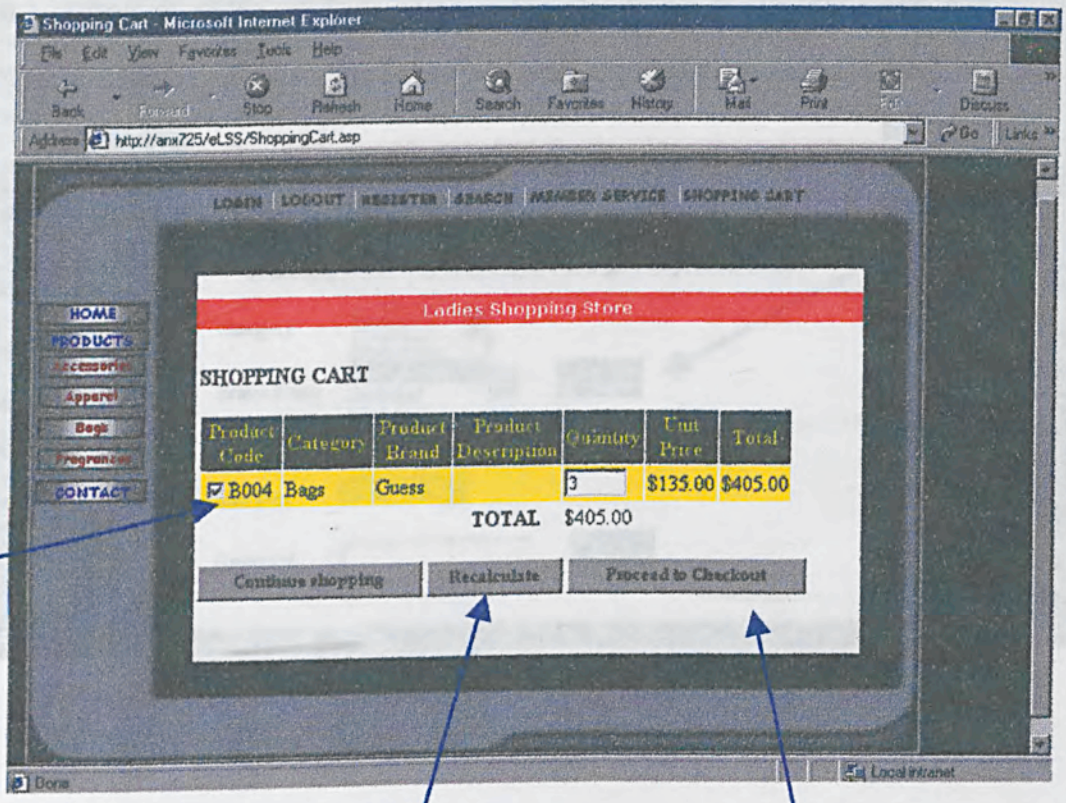
If viewing apparel, clicking the *Choose Size* scrolling text box can choose the size of the dress. If want to buy the item, click the Put Into Cart button.



SHOPPING CART

After clicking the Put Into Cart button, the page below is shown. This page can calculate the number of item purchased. For example, if want to purchase 3 items, just change the number of quantity in the quantity field according to the desired needs.

If want to delete the ordered items, click on the Check Box and click Recalculate button. If want to purchase the ordered items, click the Proceed to Checkout button.



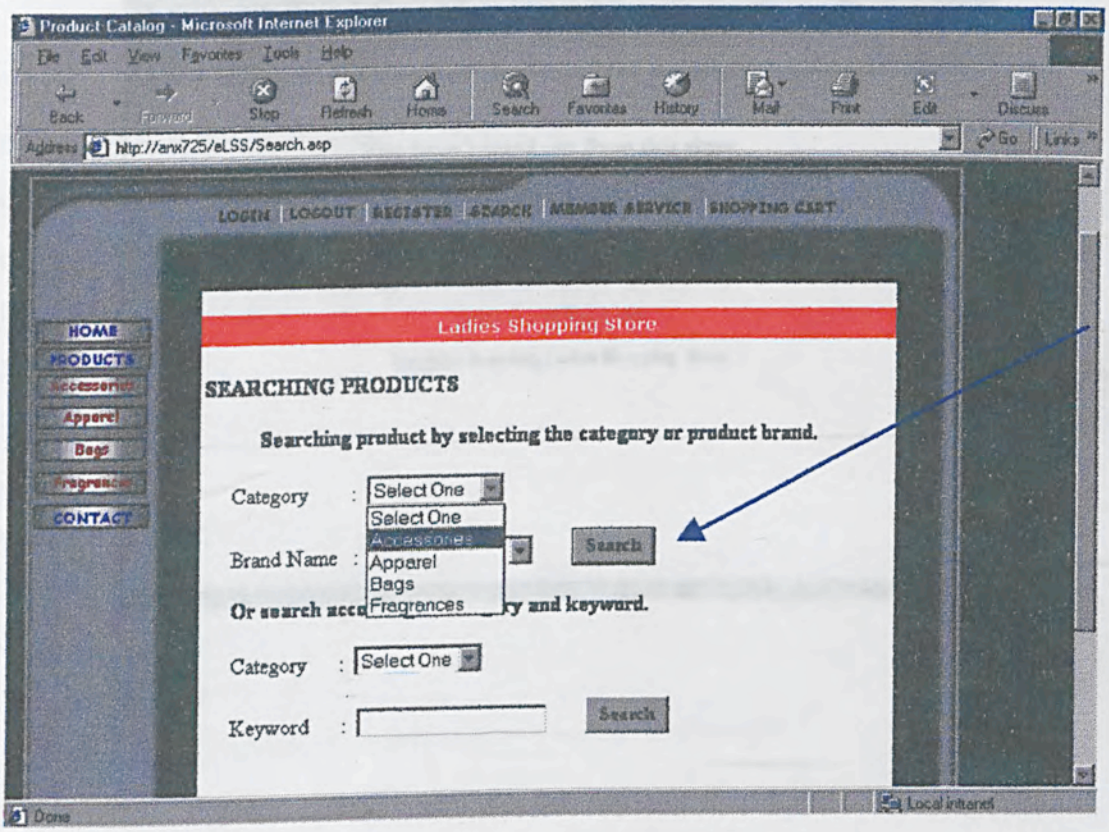
Check Box

Recalculate Button

Proceed to Checkout Button

SEARCHING THE PRODUCTS

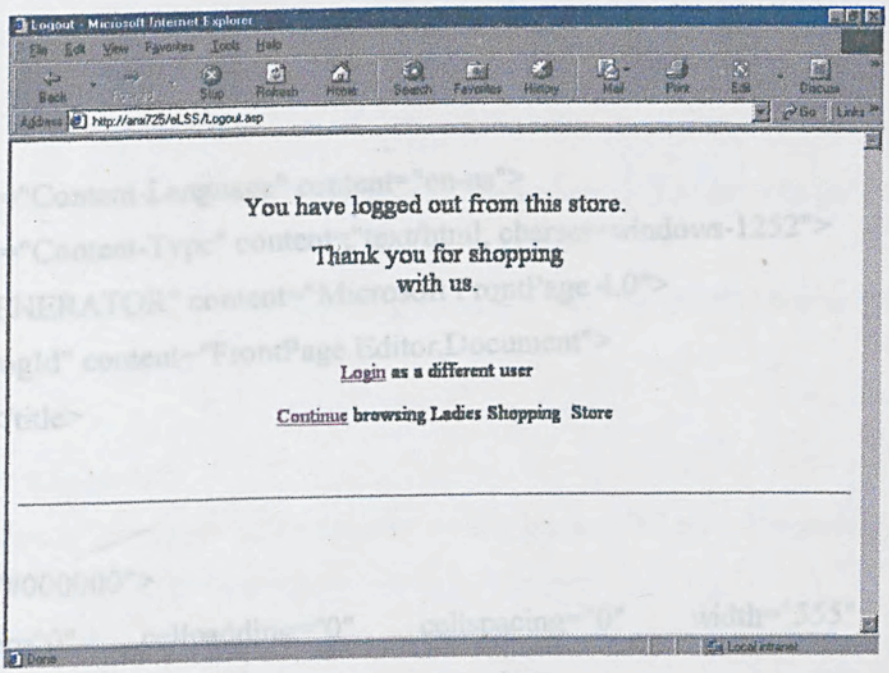
e-LSS also provide searching for products by selecting the category or product brand and also typing the keyword. After that, click the Search button. This will bring to the particular product page.



Search Button

LOGOUT

By clicking the LOGOUT button from the top navigator button, the user is automatically logged out from the system. The logout page is shown below.



APPENDIX 3
SAMPLE SOURCE CODE

(A) LOGIN PAGE

The HTML Page

```
<html>
<head>
<meta http-equiv="Content-Language" content="en-us">
<meta http-equiv="Content-Type" content="text/html; charset=windows-1252">
<meta name="GENERATOR" content="Microsoft FrontPage 4.0">
<meta name="ProgId" content="FrontPage.Editor.Document">
<title>Login ID</title>
</head>

<body bgcolor="#000000">
<table border="0" cellpadding="0" cellspacing="0" width="555" height="535"
bordercolor="#FFFF00">
<td width="698" height="533">
<TABLE border=0 cellPadding=0 cellSpacing=0 width=692 height="1" bordercolor="#0000FF">
 <TBODY>
 <TR>
 <TD width=126 height="35"><img border="0" src="Image/topleft1.gif" width="126"
 height="67"></TD>
 <TD width=530 height="35" colspan="3" background="Image/topcenter.gif">  
 <img border="0" src="Image/login.gif"> <img border="0" src="Image/logoff.gif">
 <a href="Register.htm"><img border="0" src="Image/register.gif" width="67" height="13"></a>
 <a href="Search.asp"><img border="0" src="Image/search.gif" width="54" height="13"></a>
 <img border="0" src="Image/memservice.gif" width="111" height="14">  <img border="0"
 src="Image/viewscart.gif"></TD>
```

```
<TD width=156 height="35" background="Image/topright.gif"> </TD>
</TR>
<TR>
<TD align=left
colSpan=3 height="1" width="127" background="Image/left2.gif"></TD>
<TD align=left height="1" width="529"></TD>
<TD align=right height="1" width="156" background="Image/right1.gif"> </TD></TR>
<TR>
<TD
vAlign=top height="41" width="127" colspan="3" background="Image/left2.gif">
 
<TABLE border=0 cellPadding=0 cellSpacing=0 width="101" height="1" bordercolor="#FF0000">
<TBODY>
<TR>
<TD width="99" height="1">
    <p align="center"><a href="LSHome.htm"><img border="0" src="Image/home.gif"
     width="85" height="18"></a><br>
     <img border="0" src="Image/product.gif" width="85" height="20"><br>
     <a href="Accessories.asp">
     <img border="0" src="Image/accbar.gif" width="82" height="23"></a><br>
     <a href="Apparel.asp">
     <img border="0" src="Image/appbar.gif" width="82" height="24"></a><a
     href="Bags.asp"><img border="0" src="Image/bagsbar.gif" width="82" height="24"></a><a
     href="Fragrances.asp"><img border="0" src="Image/fragrancesbar.gif" width="82"
     height="23">
     </a>
     <br>
     <a href="Contact.htm">
     <img border="0" src="Image/contact.gif" width="85" height="18">
     </a>
     </p>
```

```
<p align="center"><br>
<br>
<br>
</p>
</TD></TR>
<TR>
<TD width="99" height="1"> </TD></TR>
<TR>
<TD width="99" height="39"></TD></TR></TBODY></TABLE></TD>
<TD rowSpan=2 vAlign=top height="1" width="529">

<TABLE border=0 cellPadding=3 cellSpacing=0 width="512" bordercolor="#0000FF"
height="1" bgcolor="#FFFFFF">
<TBODY>
<TR>
<TD align=left height="19" width="502"></TD></TR>
<TR>
<TD bgColor=red height="16" width="502">
<p align="center"><font color="#ffffff" face="verdana,arial" size="2"><b>Ladies
Shopping Store</b></font></p>
</TD></TR>
<TR>
<TD height="22" width="506">   </TD>
</TR>
<TR>
<TD height="34" width="506">
<p align="center"><b>Please login before you purchase any item in
this site. Thank you.</b></p>
<p align="center"> </p>

<form action="CheckLogin.asp" Method="post" name="frmUser" align="center">
```

```
<p align="center"><font
face="Verdana"><b>LoginID</b> </font>      
<input name="loginID" size="15" tabIndex="1"></p>
<p align="center"><b><font
face="Verdana">Password  </font></b>  
<input name="PWord" size="15" tabIndex="2" type="password" value></p>
<p align= "center">                
       
<input name="B3" type="submit" value="Login" style="font-family: Book Antiqua; font-
weight: bold">  <input name="B2" type="reset" value="Reset" style="font-family: Book
Antiqua; font-weight: bold">    
</p>
</form>

<p align="center"><b><a href="ForgotPWord.asp">Forgotten your password?
</a></b><u><br>
</u><br>
<b><a href="Register.htm">New User?</a></b><a href="Register.htm"> </a></p>
<p> </p>
</TD>
</TR>
</TBODY></TABLE></TD>
<TD align=right height="1" width="156" background="Image/right1.gif"> </TD></TR>
<TR>
<TD
vAlign=bottom height="1" width="127" colspan="3" background="Image/left2.gif"> 
<p> </p>
<p> </p>
</TD>
<TD
vAlign=bottom height="1" width="156" background="Image/right1.gif"> </TD></TR>
```

```
<TR>
  <TD align=left
  colSpan=2 height="52" width="127" background="Image/bottomleft.gif"> </TD>
  <TD align=left
  colSpan=2 height="52" width="529" background="Image/bottomcenter.gif"> </TD>
  <TD align=right height="52" width="156"
background="Image/bottomright.gif"> </TD></TR></TBODY></TABLE>
</table>
</body>
</html>
```

The ASP Page

```
<!-- #include file="adovbs.inc" -->
<%
   If trim(Request.Form("LoginID"))="" Then
%>     <!-- #include file="Login.htm" -->
<%     Response.Write "Incorrect login name! Please enter your Login ID!"
   Elseif trim(Request.Form("PWord"))="" Then
%>     <!-- #include file="Login.htm" -->
<%     Response.Write "Incorrect password! Please enter your password!"
   Else

Dim rstClientInfo,sql,strConnect,strLogin, strPWord

      strLogin = request("LoginID")
      strPWord = request("PWord")

      set strConnect = server.CreateObject ("ADODB.Connection")
      set rstClientInfo=server.CreateObject("ADODB.Recordset")
```

```
sql="select * from CUSTOMERS where LoginID='" & trim(strLogin) & "';"
strConnect.Open "eLSS"
rstClientInfo.open sql,strconnect

If not rstClientInfo.EOF Then

    If Ucase(rstClientInfo("Password")) = Ucase(trim(strPWord)) Then

        Dim strName, value

        For Each sField In rstClientInfo.Fields

            strName = sField.Name
            Value = sField.value
            Session(strName) = value

        Next

            Response.Redirect "Welcome.asp"

    Else
%>
<%    Response.Write ("<p align=""center""><strong>Sorry, invalid password. Click 'Back'
and try again.<strong></p>")
%>

<%
    End if
```

```
        Else

%>
<%      Response.Write ("<p align=""center""><strong>Invalid Login ID. Click 'Back' and try
again.<strong></p>")
%>

<%      End if

    End if

%>
```

(B) SHOPPING CART

```
<%@ Language=VBScript %>

<!-- #include file="db.inc" -->

<%
Dim prodid, quantity, arrCart, scartItem
prodid = Request.Form("fproductid")
saiz = Request.Form("size")
quantity = Request.Form("fquantity")
arrCart = Session("MyCart")
scartItem = Session("cartItem")

If scartItem = "" Then
        Response.Write ("<p align=""center""><strong>Your browser does not accept cookies
!<strong></p>")
```

```
End if

If prodid <> "" Then
    If scartItem < maxCartItems Then
        scartItem = scartItem + 1
    End If
    Session("cartItem") = scartItem
        Dim objConn,rsItem
        Set objConn = Server.CreateObject("ADODB.Connection")
        Set rsItem = Server.CreateObject("ADODB.Recordset")

        objConn.Open "eLSS"
 sqlstmt = "SELECT * From PRODUCTS"
 rsItem.Open sqlstmt , objConn

    rsItem.Filter = "CatalogID = " & prodid
    If Not rsItem.EOF Then
        arrCart(cCatalog,scartItem) = rsItem("Category")
        arrCart(cProductCode,scartItem) = rsItem("Code")
        arrCart(cProductBrand,scartItem) = rsItem("Brand")
        arrCart(cProductDes,scartItem) = rsItem("Description")
        arrCart(cSize,scartItem) = saiz
        arrCart(cQuantity,scartItem) = CInt(quantity)
        arrCart(cUnitPrice,scartItem) = rsItem("Price")
    Session("MyCart") = arrCart
        rsItem.Close
        objConn.Close
    End If
Else
```

```
Dim strAction
strAction = UCase(Left(Request.Form("action"),5))

Select Case strAction

Case "CONTI"
    Response.Redirect "Welcome.htm"

Case "RECAL"

    For i = 1 To scartItem
    Dim tquantity
    tquantity = Request.Form("Quantity" & Cstr(i))
    arrCart(cQuantity,i) = CInt(tquantity)
    Next

    For i = 1 to scartItem
    Dim confirm
    confirm = Request.Form("selected" & CStr(i))
    If confirm <> "yes" Then
       scartItem = scartItem - 1
       Dim x
       For x = 1 to UBound(arrCart,1)
            arrCart(x,i) = ""
        Next
        Dim n
        n = i
        while n < UBound(arrCart,2)
            For x = 1 to UBound(arrCart,1)
                arrCart(x,n) = arrCart(x,n + 1)
                arrCart(x,n + 1) = ""
```

```
            Next
            n = n + 1
        wend
    end If
    Next
    Session("cartItem") = scartItem
    Session("MyCart") = arrCart

Case "PROCE"
If scartItem = 0 Then
Response.Redirect "Error.htm"
else
Response.Redirect "Checkout.asp"
end if

End Select
End If
%>

<html>
<head>
<meta http-equiv="Content-Language" content="en-us">
<meta http-equiv="Content-Type" content="text/html; charset=windows-1252">
<meta name="GENERATOR" content="Microsoft FrontPage 4.0">
<meta name="ProgId" content="FrontPage.Editor.Document">
<title>Shopping Cart</title>
</head>

<body bgcolor="#000000">
```

```
<table border="0" cellpadding="0" cellspacing="0" width="631" height="442"
bordercolor="#FFFF00">
<td width="793" height="440">
<TABLE border=0 cellPadding=0 cellSpacing=0 width=686 height="233" bordercolor="#0000FF">
 <TBODY>
 <TR>
  <TD width=126 height="59"><img border="0" src="Image/topleft1.gif" width="126"
height="67"></TD>
  <TD width=518 height="59" colspan="3" background="Image/topcenter.gif">  
   <img border="0" src="Image/in_out.gif" width="79" height="13"> <a
href="Register.htm"><img border="0" src="Image/register.gif"></a>
   <a href="Search.asp"><img border="0" src="Image/search.gif"></a> <img border="0"
src="Image/memservice.gif"> 
   <img border="0" src="Image/viewscart.gif">   </TD>
  <TD width=162 height="59" background="Image/topright.gif"> </TD>
 </TR>
 <TR>
  <TD align=left
  colSpan=3 height="21" width="127" background="Image/left2.gif"></TD>
  <TD align=left height="21" width="517"></TD>
  <TD align=right height="21" width="162" background="Image/right1.gif"> </TD></TR>
 <TR>
  <TD
  vAlign=top height="101" width="127" colspan="3" background="Image/left2.gif" rowspan="3">
    
   <TABLE border=0 cellPadding=0 cellSpacing=0 width="101" height="1"
bordercolor="#FF0000">
    <TBODY>
     <TR>
      <TD width="99" height="1">
```

```
        <p align="center"><a href="LSHome.htm"><img border="0" src="Image/home.gif"
 width="85" height="18"></a><br>
        <img border="0" src="Image/product.gif" width="85" height="20"><br>
        <a href="Accessories.asp">
        <img border="0" src="Image/accbar.gif" width="82" height="23"></a><br>
        <a href="Apparel.asp">
        <img border="0" src="Image/appbar.gif" width="82" height="24"></a><a
 href="Bags.asp"><img border="0" src="Image/bagsbar.gif" width="82" height="24"></a><a
 href="Fragrances.asp"><img border="0" src="Image/fragrancesbar.gif" width="82" height="23">
        </a>
        <br>
        <a href="Contact.htm">
        <img border="0" src="Image/contact.gif" width="85" height="18">
        </a>
        </p>
        <p align="center"><br>
        <br>
        <br>
        </p>
      </TD></TR>
     <TR>
      <TD width="99" height="1"> </TD></TR>
     <TR>
      <TD width="99" height="1"></TD></TR></TBODY></TABLE></TD>
  <TD vAlign=top height="320" width="517">

    <TABLE border=0 cellPadding=3 cellSpacing=0 width="510" bordercolor="#0000FF"
 height="145" bgcolor="#FFFFFF">
     <TBODY>
     <TR>
      <TD align=left height="19" width="500"></TD></TR>
```

```
      <TR>
       <TD bgColor=red height="16" width="500">
        <p align="center"><font color="#ffffff" face="verdana,arial" size="2"><b>Ladies
        Shopping Store</b></font></p>
       </TD></TR>
      <tr>
<td width="524">

</td>
      </tr>
      <tr>
<td width="655">

<P>


<b>SHOPPING CART</b>

<P>


<FORM action="ShoppingCart.asp" method="POST">
<TABLE border=0 width="454" height="97" >
  <TR bgColor=darkblue>
    <TD width="85" height="40" bgcolor="#000000">
     <p align="center"><b><font face="Times New Roman" color="#FFFF00">Product
     Code</font></b></TD>
    <TD width="87" height="40" bgcolor="#000000">
```

```
      <p align="center"><b><font face="Times New Roman"
color="#FFFF00">Category</font></b></p>
     </TD>
      <TD width="96" height="40" bgcolor="#000000">
      <p align="center"><b><font face="Times New Roman" color="#FFFF00">Product
      Brand</font></b></p>
     </TD>
      <TD width="103" height="40" bgcolor="#000000">
      <p align="center"><b><font face="Times New Roman" color="#FFFF00">Product
      Description</font></b></TD>
     <TD width="67" height="40" bgcolor="#000000">
      <p align="center"><b><font face="Times New Roman"
color="#FFFF00">Quantity</font></b></p>
     </TD>
     <TD width="64" height="40" bgcolor="#000000">
      <p align="center"><b><font face="Times New Roman" color="#FFFF00">Unit
      Price</font></b></TD>
     <TD width="54" height="40" bgcolor="#000000">
      <p align="center"><b><font face="Times New Roman"
color="#FFFF00">Total</font></b></TD></TR>
<%
Dim isubtotal, i
isubtotal = 0
For i = 1 to scartItem
%>
  <TR bgColor=#FFE900>
    <TD width="85" height="24" bgcolor="#FFFF00"><INPUT name=selected<%= Cstr(i)%>
type=checkbox value="yes" checked><%= arrCart(cProductCode,i) %></TD>
    <TD width="87" height="24" bgcolor="#FFFF00"><%= arrCart(cCatalog,i) %></TD>
    <TD width="96" height="24" bgcolor="#FFFF00"><%= arrCart(cProductBrand,i) %></TD>
    <TD width="103" height="24" bgcolor="#FFFF00"> </TD>
```

```
    <TD width="67" height="24" bgcolor="#FFFF00"><INPUT type="text" name=quantity<%=
CStr(i) %> value="<%= arrCart(cQuantity,i) %>" size="5"></TD>
    <TD width="64" height="24" bgcolor="#FFFF00"><%=
FormatCurrency(arrCart(cUnitPrice,i),2) %></TD>
    <TD width="54" height="24" bgcolor="#FFFF00"><%= FormatCurrency(arrCart(cUnitPrice,i)
* arrCart(cQuantity,i),2) %></TD></TR>

<%
  isubtotal = isubtotal + (arrCart(cUnitPrice,i) * arrCart(cQuantity,i))
  Next

%>

    <TR>
    <TD width="85" height="21" bgcolor="#FFFFFF"></TD>
    <TD width="87" height="21" bgcolor="#FFFFFF"></TD>
    <TD width="96" height="21" bgcolor="#FFFFFF"></TD>
    <TD bgColor=#FFFFFF width="103" height="21">
    <p align="center"><b><font style="background-color: #FFFFFF" color="#000000"
face="Times New Roman">TOTAL</font></b></p>
    </TD>
    <TD bgColor=#FFFFFF width="67" height="21"><%= FormatCurrency(isubtotal,2)
%></TD></TR></TABLE>
<P><INPUT name="action" type=submit value="Continue shopping" style="font-family: Book
Antiqua; font-weight: bold">
<INPUT name=action type=submit value="Recalculate" style="font-family: Book Antiqua; font-
weight: bold"><INPUT name=action1 type=submit value="Proceed to Checkout" style="font-
family: Book Antiqua; font-weight: bold">
```

```
 <br>
</P></FORM>

</td>
    </tr>
     <tr>
<td width="524">

</td>
     </tr>
     </TBODY></TABLE></TD>
  <TD align=right height="101" width="162" background="Image/right1.gif"
rowspan="3"> </TD></TR>
 <TR>
  <TD vAlign=top height="1" width="517">


  </TD>
 </TR>
 <TR>
  <TD vAlign=top height="1" width="517">


  </TD>
 </TR>
 <TR>
  <TD align=left
 colSpan=2 height="52" width="127" background="Image/bottomleft.gif"> </TD>
 <TD align=left
 colSpan=2 height="52" width="517" background="Image/bottomcenter.gif"> </TD>
```

```
    <TD align=right height="52" width="162"
background="Image/bottomright.gif"> </TD></TR></TBODY></TABLE>
<%If scartItem = 0 Then
    Response.Write ("There is currently no item in your cart !")
end if
%>

</table>
</body>
</html>
```

GLOSSARY OF TERMS

ActiveX A relatively new technology that makes it easy to embed animated objects, data, and computer code on Web pages. With ActiveX controls, a Web browser that supports ActiveX can play just about any item you might encounter on a Web page.

Bandwidth The maximum information-carrying capacity of an electronic connection or network.

Browse To wander around a portion of the Internet looking for items of interest. Also known as surfing or cruising.

Browser A software program for viewing HTML pages.

Cache A temporary storage area that a Web browser uses to store pages that it has recently opened. The cache enables the browser to quickly load these pages if you decide to return to them.

Client All the computers and software that make up the Internet are either clients (which receive and translate data) or servers (which provide and translate data). Thus, client software allows you to get information from the Internet.

Comment Text in an HTML document (or computer program) that will be seen only by the people who edit the source for that page. Comments are normally invisible when a page is viewed with a Web browser.

Common Gateway Interface (CGI) An interface for external programs to talk to a Web server. Programs that are written to use CGI are called CGI programs or CGI scripts, and are commonly used for processing HTML forms.

Domain The address of a computer on the Internet. A user's Internet address is made up of a username and a domain name.

Domain Name System (DNS) An Internet addressing system that uses a group of names that are listed with dots (.) between them, working from the most specific to the most general group. In the United States, the top (most general) domains are network categories such as edu (education), com (commercial), and gov (government)

Download To retrieve a file or files from a remote machine to your local machine.

e-mail (electronic mail) A system that enables a person to compose a message on a computer and transmit that message through a computer network, such as the Internet, to another computer user.

e-mail address The word-based Internet address of a user, typically made up of a username, an at (@) sign, and a domain name (that is, user@domain). E-mail addresses are translated from the numeric IP addresses by the domain name system (DNS).

FAQ Short for frequently asked questions, a computer file containing the answers to frequently asked questions about a particular Internet resource.

Firewall A security device placed on a LAN to protect it from Internet intruders. This can be a special kind of hardware router, a piece of software, or both.

Form A page that includes areas to be filled out by the reader. HTML forms allow information to be sent back to the company or individual who made (or maintains) the page.

Frame A rectangular region within the browser window that displays a Web page alongside other pages in other frames.

File Transfer Protocol (FTP) The basic method for copying a file from one computer to another through the Internet.

Graphics Digitized pictures and computer-generated images.

Home page Frequently, this term refers to the cover of a particular Web site. The home page is the main, or first, page displayed for an organization's or person's World Wide Web site.

Host Any computer on a network that is a repository for services available to other computers on the network. It is quite common to have one host machine provide several services, such as WWW and USENET.

Hypertext Markup Language (HTML) The document formatting language used to create pages on the World Wide Web.

Hypertext Transfer Protocol (HTTP) The standard method for exchanging information between HTTP servers and clients on the Web. The HTTP specification lays out the rules of how Web servers and browsers must work together.

Hypertext Text that allows readers to jump spontaneously among onscreen documents and other resources by selecting highlighted keywords that appear on each screen. Hypertext appears most often on the World Wide Web.

Interlaced GIF An image file that will appear blocky at first, then more and more detailed as it continues downloading. (Similar to a progressive JPEG file.)

Internet A large, loosely organized integrated network connecting universities, research institutions, government, businesses, and other organizations so that they can exchange messages and share information.

Internet Explorer An advanced Web browser created by Microsoft Corporation. Internet Explorer is powerful and easy to use.

Internet Service Provider (ISP) The company that provides you or your company with access to the Internet. ISPs usually have several servers and a high-speed link to the Internet backbone.

Intranet A private network with access restricted to one organization, but which uses the same standards and protocols as the global public Internet.

Integrated Digital Services Network (ISDN) Essentially operates as a digital phone line. ISDN delivers many benefits over standard analog phone lines, including multiple simultaneous calls and higher-quality data transmissions. ISDN data rates are 56Kbps to 128Kbps.

Kilobits per second (Kbps) A rate of transfer of information across a connection such as the Internet.

Local Area Network (LAN) A computer network limited to a small area.

Link An icon, a picture, or a highlighted string of text that connects the current Web page to other Web pages, Internet sites, graphics, movies, or sounds. On the Web, you skip from page to page by clicking on links.

Megabits per second (Mbps) A rate of transfer of information across a connection such as the Internet. (Equal to 1,000Kbps.)

Modem A device to convert the digital signals of a computer to an analog format for transmission across telephone lines.

Multimedia A description for systems capable of displaying or playing text, pictures, sound, video, and animation.

Navigation Movement within a computer environment (for example, navigation of a Web site).

Netscape Short for Netscape Communications Corporation, a software company that developed and markets a popular World Wide Web browser called Navigator. Some people casually refer to Navigator as Netscape.

Network A set of computers interconnected so that they can communicate and share information. Most major networks are connected to the global network-of-networks, called the Internet.

Pixel An individual dot of color in a computer graphics image.

Protocol Specific rules and conventions defining how data may be exchanged between any two devices.

Resolution The number of individual dots, or pixels, that make up an image.

Resource A generic term to describe the varied information and activities available to Internet users.

Search engine A program that provides a way to search for specific information.

Server A networked computer that "serves" a particular type of information to users. See also Web server.

Server-side image maps A technique for implementing Web page images that lead to more than one link, so that the server computer determines which link to go to. This method is now less commonly used than client-side image maps.

Shopping cart The defining characteristic of a shopping cart script is that it preserves state throughout the shopping experience. The user enters the site and is given some unique token (often called a *cookie*). Each time the user sends a request to the server, the script passes the cookie along so the server knows which client is calling.

Source The actual text and commands stored in an HTML file, including tags, comments, and scripts that may not be visible when the page is viewed with a Web browser.

Surfing Another term for browsing.

Table Text and/or images arranged into orderly rows and columns. HTML provides several tags specifically for creating tables. Another term for database table where data are being kept or inserted.

TCP/IP (Transmission Control Protocol/Internet Protocol) The agreed-on set of computer communications rules and standards that allows communications between different types of computers and networks that are connected to the Internet.

Text editor Any program that allows you to edit text with your computer.

Unordered list An indented list with a special bullet symbol in front of each item. (See also ordered list and definition list).

URL (uniform resource locator) Also commonly called a location or address. This is an addressing system that locates documents on the Internet.

VBScript A script language developed by Microsoft. A technical competitor to Java and JavaScript applications.

Web server A computer on the Internet that hosts data that can be accessed by Web browsers using the HTTP protocol.

Web Site A collection of World Wide Web documents, usually consisting of a home page and several related pages.

Webmaster The individual responsible for maintaining and updating the content of a World Wide Web document. Webmasters are the creative force behind the World Wide Web.

World Wide Web (WWW or the Web) A set of Internet computers and services that provide an easy-to-use system for finding information and moving among resources. WWW services feature hypertext, hypermedia, and multimedia information, which can be explored through browsers such as Netscape or Internet Explorer.

REFERENCES

[1] H. Amir Khalid, "E-retail? It's no big deal here". In-Tech The Star, pp. 3, Tuesday, January 11, 2000.

[2] Binshan Lin, "Viewpoint : Electronic Commerce : A Global Perspective". Industrial Management & Data Systems, No. 3 & 4, Vol.97, 1997.

[3] Brian Jepson, "World Wide Web Database programming for Windows NT". John Wiley & Sons, Inc, 1996.

[4] Chang-tseh Hsieh, Binshan Lin, "Internet Commerce for small Businesses". Industrial Management & Data Systems, No. 3 & 4, Vol.98, 1998.

[5] Charles V. Trappey, Amy J.C. Trappey, "A Chain Store Marketing Information System : Realizing Internet-based Enterprise Intergration and Electronic Commerce". Industrial Management & Data Systems, No. 5 & 6, Vol.98, 1998.

[6] Cliff Edwards, "Enabling e-commerce to Deliver". Computimes News Straits Times, pp. 26, Thursday, November 4, 1999.

[7] Cordelia Lee, "What's Holding Back E-commerce in Malaysia?". Business Computing News Straits Times, pp.1 – 3, Wednesday, August 4, 1999.

[8] Frances Katz, "Adding More Fun to Online Shopping". Computimes News Straits Times, pp. 22, Monday, December 20, 1999.

[9] Fred Palumbo, Paul Herbig, "International marketing tool : The Internet". Industrial Management & Data Systems, No. 5 & 6, Vol.98, 1998.

[10] Igor Hawryszkiewycz, "Introduction to Systems Analysis and Design". Prentice Hall Australia Pty. Ltd, 4th Edition, 1998.

[11] James A. Senn, "Analysis and Design of Information Systems". McGraw-Hill Publishing Company, 2nd Edition, 1989.

[12] Jeremiah Mahadevan, "A Practical Guide to Online Shopping". YouthQuake News Straits Times, pp.1 & 4, Friday, December 17, 1999.

[13] Jonathan Oatis, "Useful tips to Safe Online Shopping". Computimes News Straits Times, pp. 31, Thursday, December 23, 1999.

[14] Jose Alvear, "Web Developer.Com Guide to Streaming Multimedia". John Wiley & Sons, Inc, 1998.

[15] Maria O'Daniel, "Three Notable Factors Affecting the Development of Online Shopping". Computimes News Straits Times, pp. 34, Thursday, November 11, 1999.

[16] Peter Manhart, Karin Schmidt, Heiko Ziegler, "Group Interaction in Web-based Multimedia Market Places". Proceedings of the 31st Annual Hawaii International Conferences on System Sciences, Vol.7, pp. 645 – 654, 1998.

[17] Shari Lawrence Pfleeger, "Software Engineering Theory and Practice". Prentice Hall, Inc, 1998.

[18] Teoh Choon Keat, "Web Procurement sets the Trend in E-commerce". Business Computing News Straits Times, pp. 31, Wednesday, Sept 1, 1999.

[19] Thomas D.C. Little, "Commerce on the Internet". IEEE Multimedia, Vol.1, Issue 4, pp. 74 – 78, 1994.

[20] Yu Wui Wui, "Bringing forth the E-commerce Masterplan". Business Computing News Straits Times, pp.8, Wednesday, August 4, 1999.

[21] Wong Wing Soon, "Leave Approval System (LESASYS)", Document Room, Faculty of Computer Science & Information Technology, University Malaya, Session 98/99.

[22] How Siow Ting, "Web Based Customer Ordering System", Document Room, Faculty of Computer Science & Information Technology, University Malaya, Session 1999/2000.

[23] Pressman R.S., "Software Engineering: A Practitioner's Approach", 3rd Edition. Mcgraw Hill Inc, 1992.

[24] Sanjaya Hettihewa, "Active Server Pages 2.0 in 21 Days". Sams Publishing, 1998.

[25] John Kauffman, "Beginning ASP Databases". Wrox Press Ltd, 1999.

[26] Tim Duffy, "Microsoft Access 97". Microsoft Publications, 1997..

[27] Michael Van Hoover. *Sams Teach Yourself Visual InterDev 6 in 21 days.*
http://www.itknowledge.com/reference/library/0672312514/ch01

[28] Microsoft FrontPage 2000
http://www.microsoft.com/catalog/display.asp?site=768&subid=7&pg=1

[29] Access 2000
http://www.microsoft.com/catalog/display.asp?site=769&subid=22&pg=1

[30] Design Strategies
http://info.med.yale.edu/caim/manual/intro/introduction.html

[31] ASP and ASP sample codes
http://www.asp101.com/samples/index.asp
http://www.aspfree.com/demos.asp